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THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

Supplement 86

Diseases of Plants in the United States in 1933

January 15, 1935

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

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DISEASES OF PLANTS IN THE UNITED STATES IN 1933

Compiled by

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Plant Disease Reporter
Supplement 86

January 15, 1935

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INTRODUCTION

The practical worth of any summary of the reported incidence and economic importance of the plant diseases of any State or aggregate of States is obviously dependent upon the extent and accuracy of the reportorial service contributed to the task of getting out such a summary. In general, the volume and amount of detail submitted by the several collaborators on the occurrence and severity of plant diseases in the United States, in 1933, were very satisfactory. Occasionally, however, such meager and generalized reports as "same as last year;" "Reported but not observed;" and "Considerable infection" were received. Obviously, such records are of little value to the reader in quest of specific information.

The very general curtailment of allotments for travel has, of course, made it difficult, sometimes impossible, in recent years, to obtain information on the prevalence and severity of plant diseases. Hence, even at best, a summary such as the following can not be other than somewhat disappointing to the reader who desires and expects full reports on the incidence and severity of the diseases of any given crop or group of crops.

The weather over the United States as a whole, during the past year, was hot and dry in comparison with that of a normal year; hence, from the standpoint of plant diseases in general, 1933 was not remarkable. Such exceptional instances of disease outbreak as occurred will be adequately treated in those parts of the text devoted to the diseases of the crop or crops in question.

Among the more noteworthy plant-disease occurrences of the year were the discovery of the extensive infection of the Dutch elm disease in New Jersey and New York (this summary, p.70), the continued increase in distribution and severity of the bacterial wilt of corn (this summary, pp.24-25), the discovery of the root rot fungus, Phymatotrichum omnivorum, in Washington County, southern Utah, where it has not previously been known to occur but where it is evidently indigenous (P. D. R. 17:36 and 53), the widespread disappearance of the eel-grass, Zostera marina, from the Atlantic Coast (this summary, p. 92), and the sudden appearance of a leaf variegation of unknown cause on the Blakemore strawberry in several States (this summary, p.39.).

The summary includes only reports made to the Survey. No reference to important contributions to the literature of phytopathology during the year has been attempted. A list of the known host plants of the root-knot nematode, Heterodera marioni (H. radicicola), compiled by Edna M. Buhrer, Corrine Cooper, and G. Steiner of the Division of Nematology is given in the Reporter (P. D. R. 17:64-96.)

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TEMPERATURE

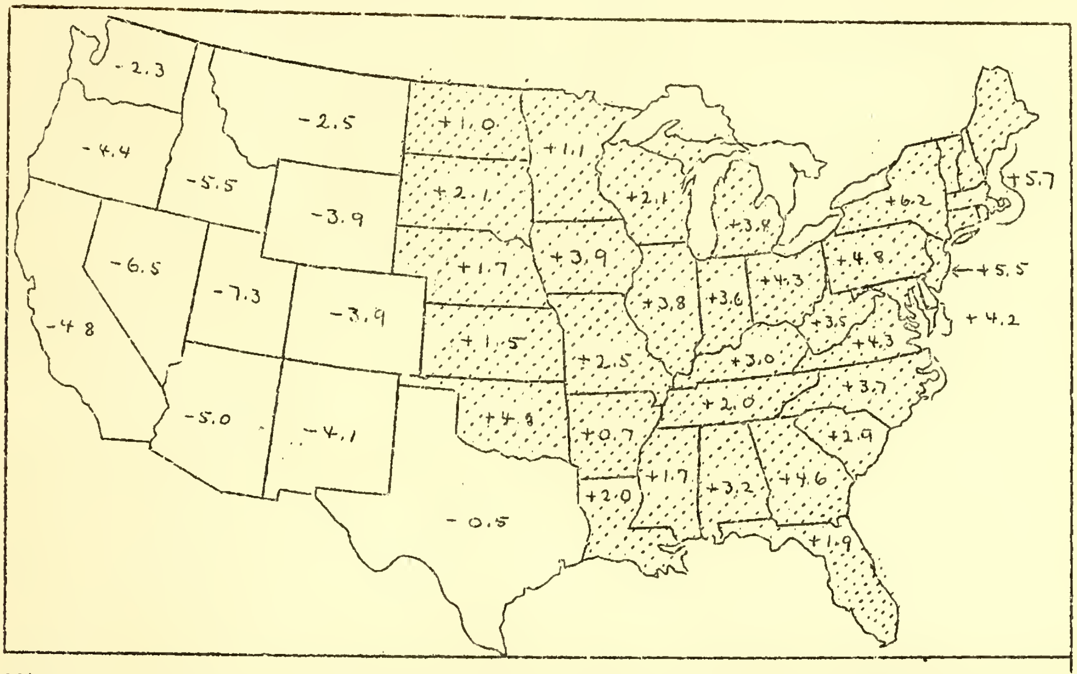

Fig. 1. Departure from the normal temperature for the winter, December, 1932 to February, 1933, inclusive. Shaded: Normal or above.

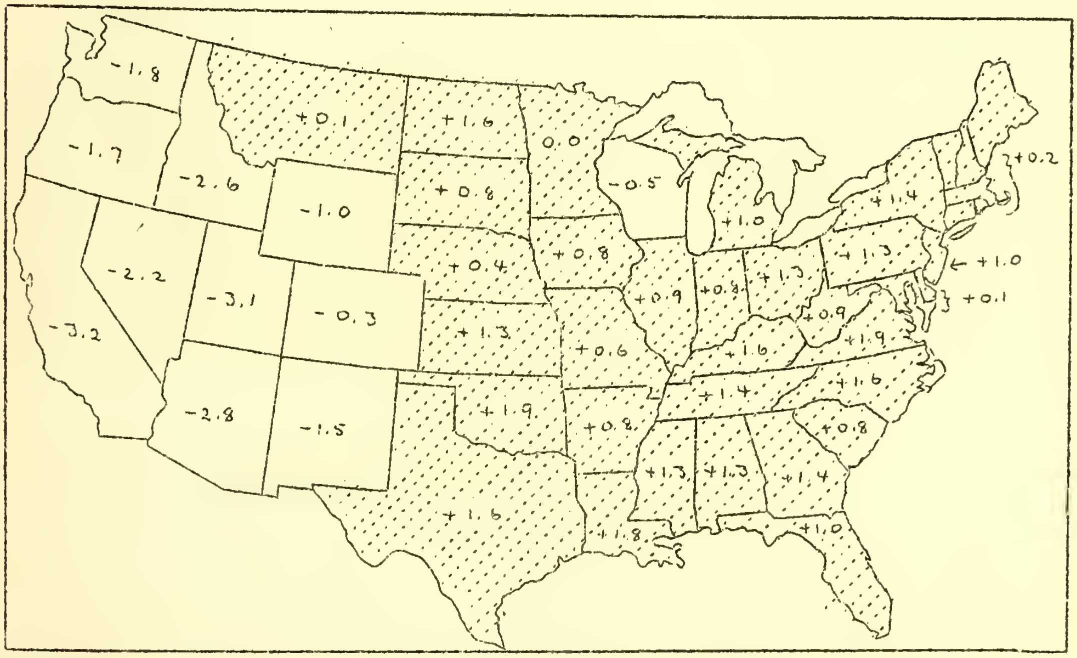

Fig. 2. Departure from the normal temperature for the spring, 1933, March to May, inclusive. Shaded: Normal or above.

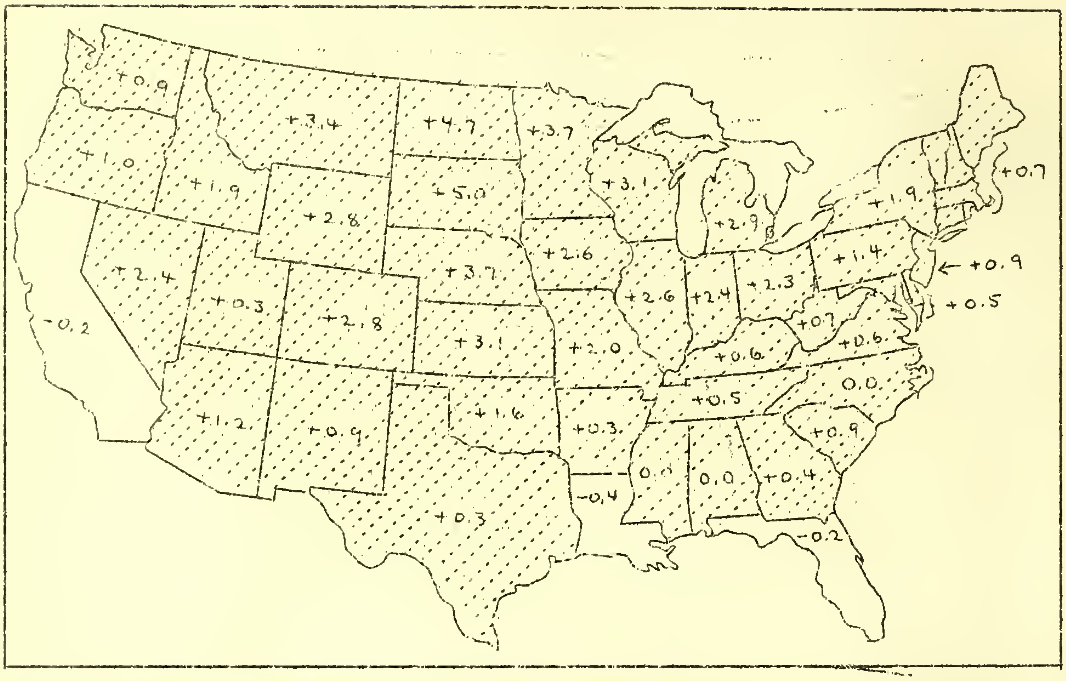

Fig. 3. Departure from the normal temperature for the summer, 1933, June to August, inclusive. Shaded: Normal or above.

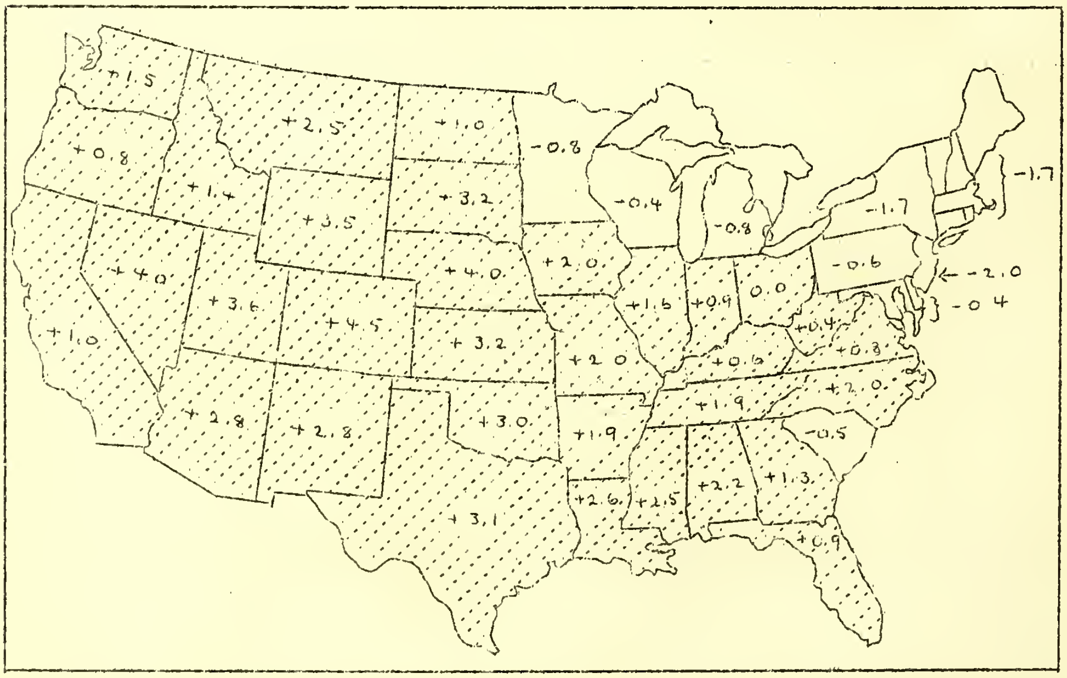

Fig. 4. Departure from the normal temperature for the autumn of 1933. September to November, inclusive. Shaded: Normal or above.

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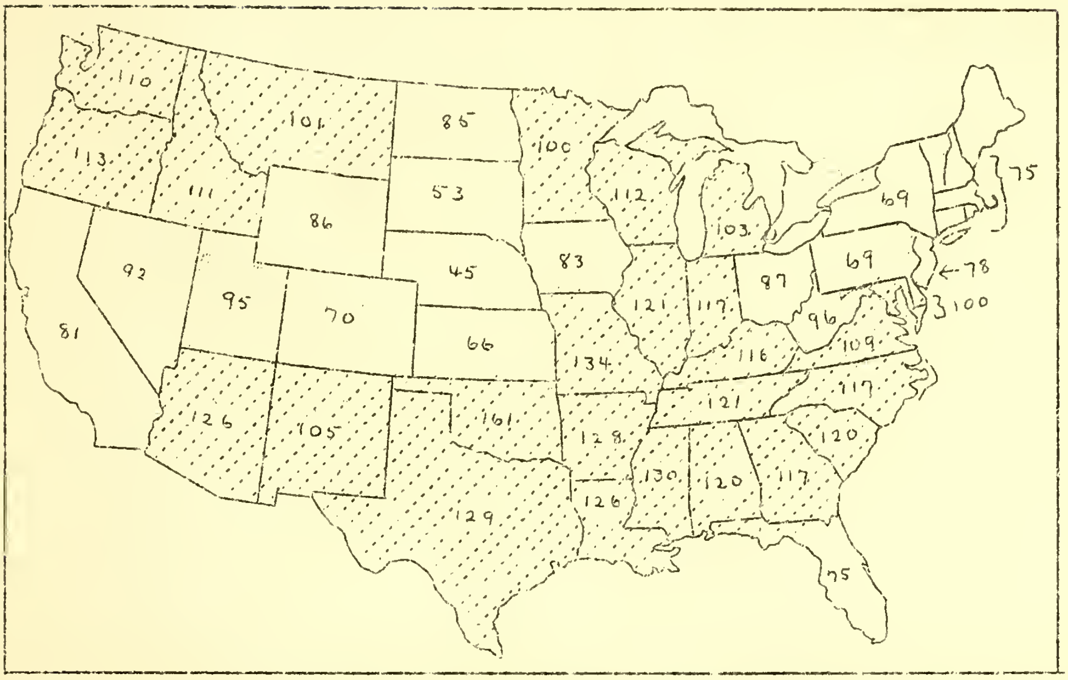

Fig. 5. Percentage of normal precipitation for the winter December, 1932 to February, 1933, inclusive. Shaded: Normal or above.

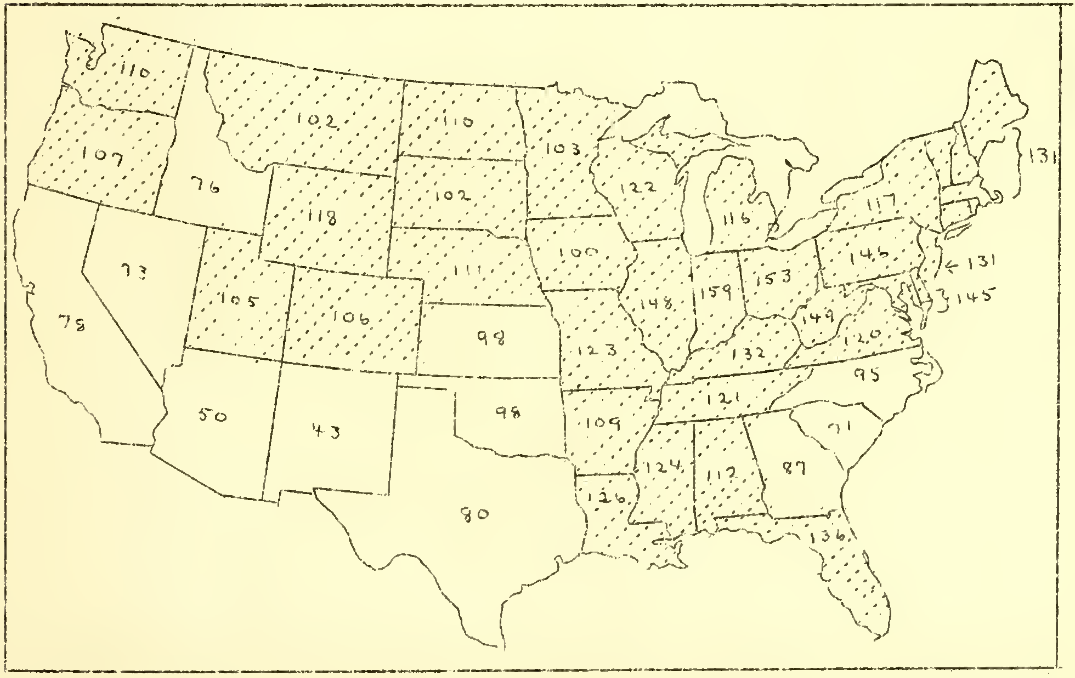

Fig. 6. Percentage of normal precipitation for the spring, March to May, 1933, inclusive. Shaded: Normal or above.

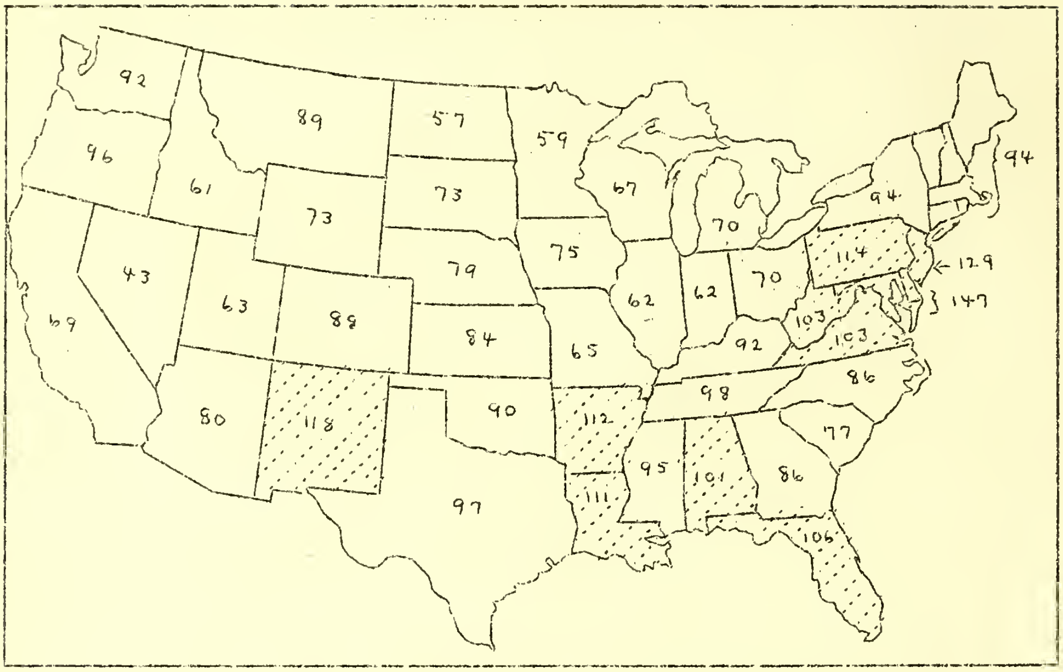

Fig. 7. Percentage of normal precipitation for the summer, June to August, 1933, inclusive. Shaded: Normal or above.

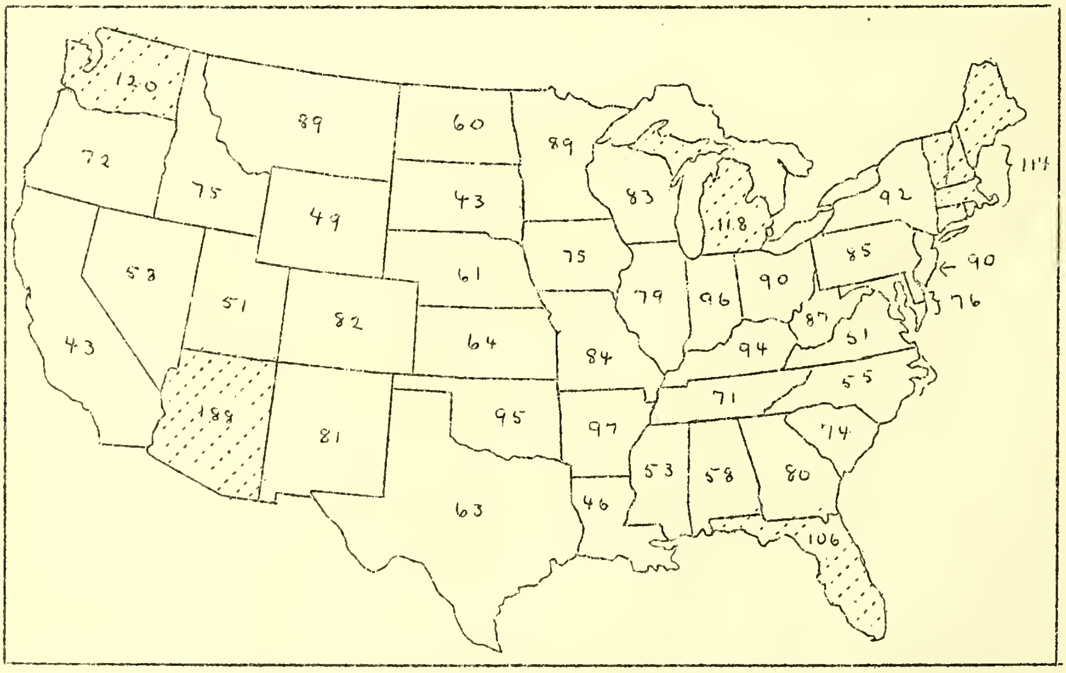

Fig. 8. Percentage of normal precipitation for the autumn, September to November, 1933. Shaded: Normal or above.

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HARRISBURG, PENNSYLVANIA

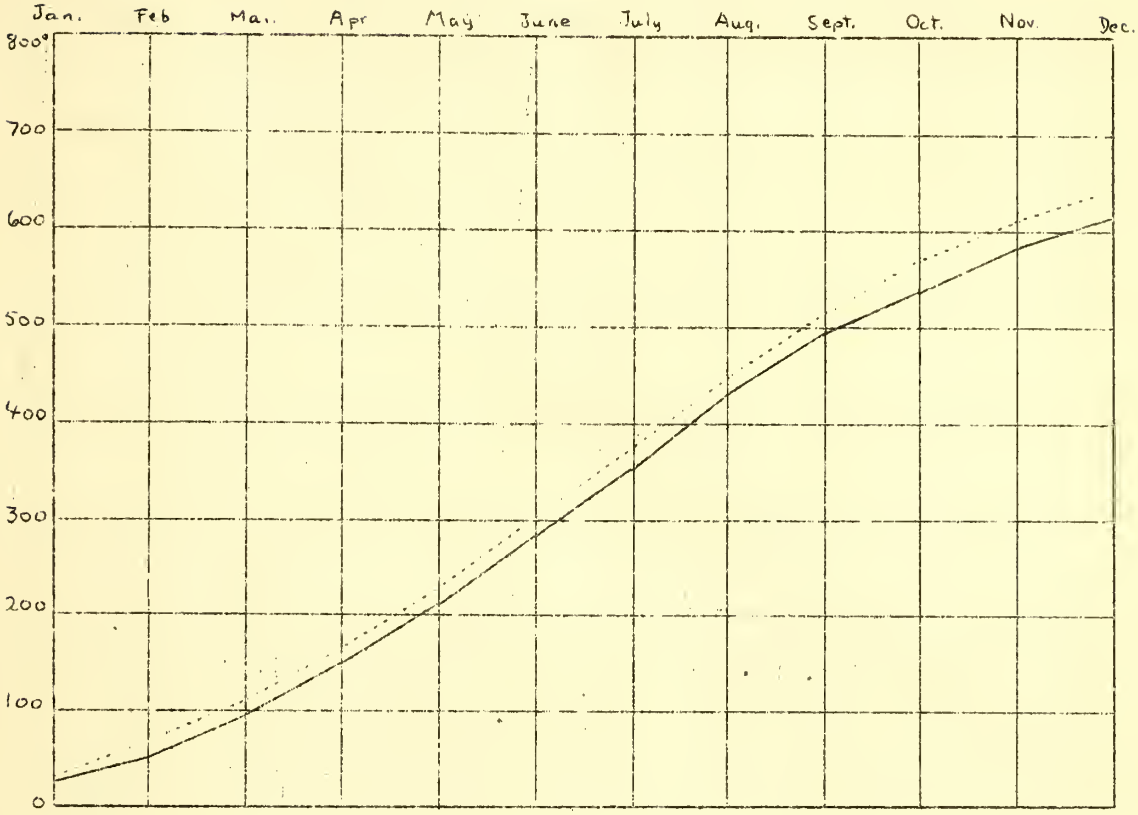

Fig. 9. Accumulated temperature in degrees F. for Harrisburg, Pennsylvania, 1933 (dotted line), compared with normal (solid line).

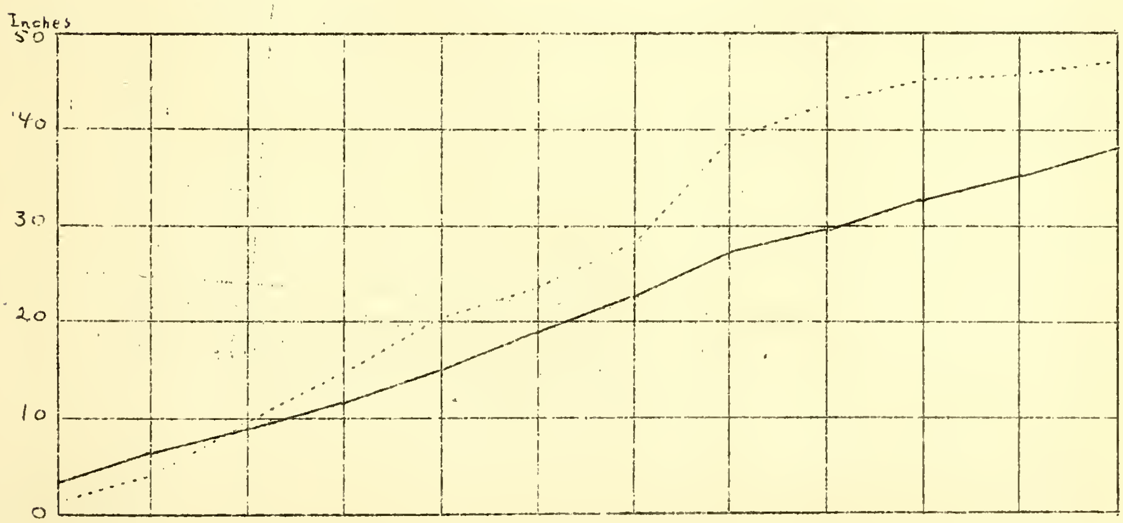

Fig. 10. Accumulated precipitation in inches for Harrisburg, Pennsylvania, 1933 (dotted line), compared with normal (solid line).

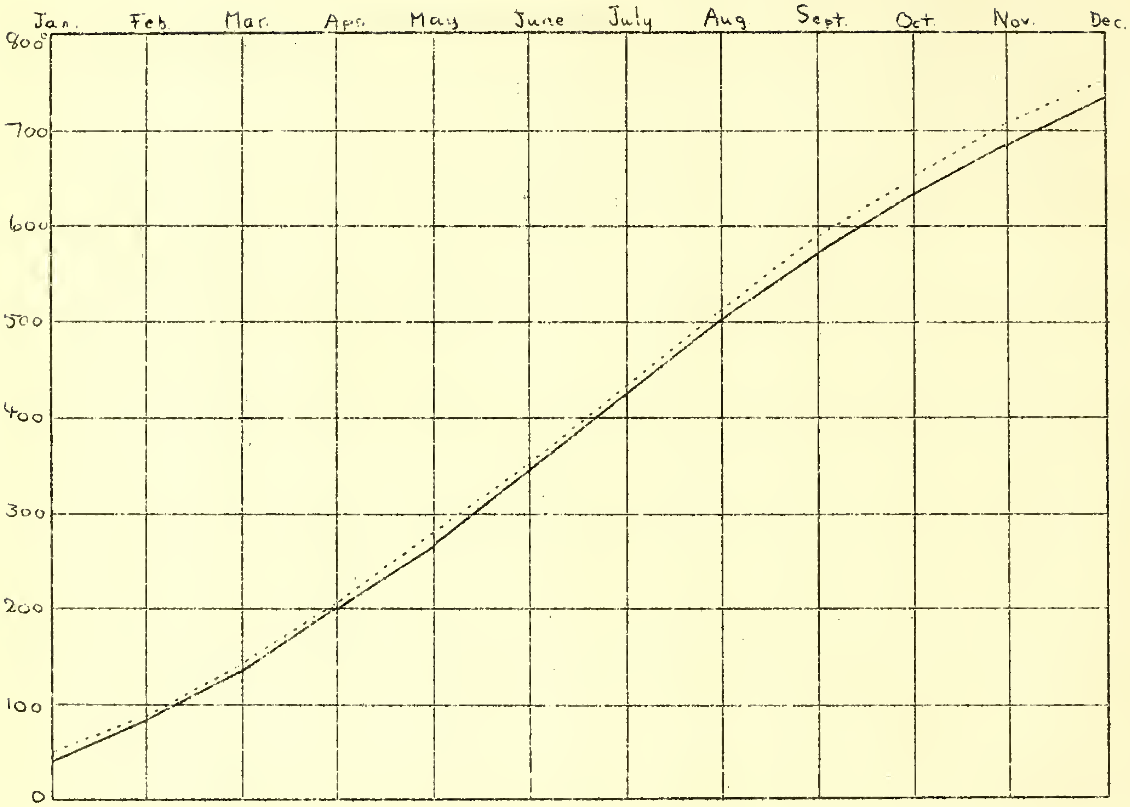

Fig. 11. Accumulated temperature in degrees F. for Atlanta, Georgia, 1933 (dotted line), compared with normal, (solid line).

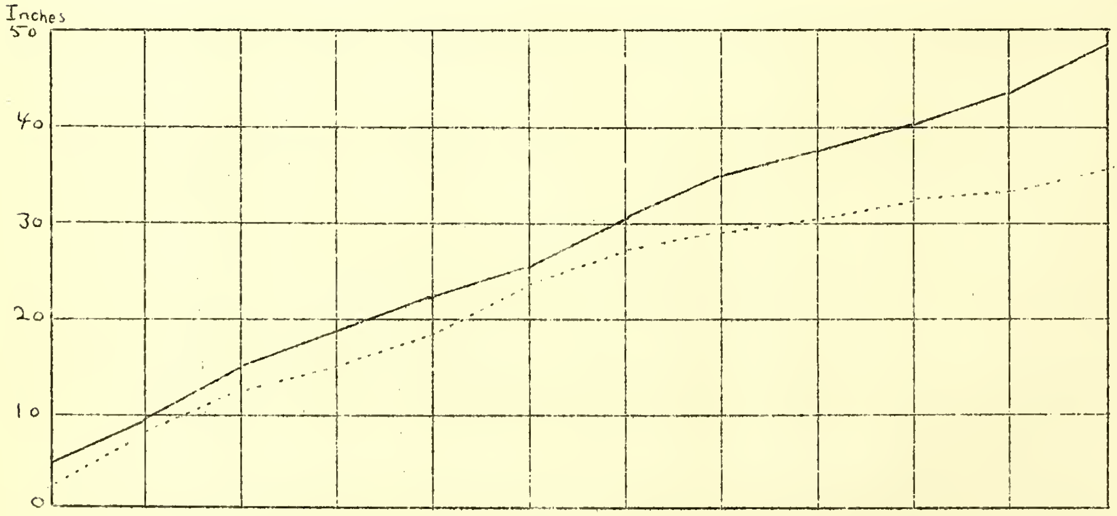

Fig. 12. Accumulated precipitation in inches for Atlanta, Georgia, 1933 (dotted line), compared with normal, (solid line).

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BISMARCK, NORTH DAKOTA

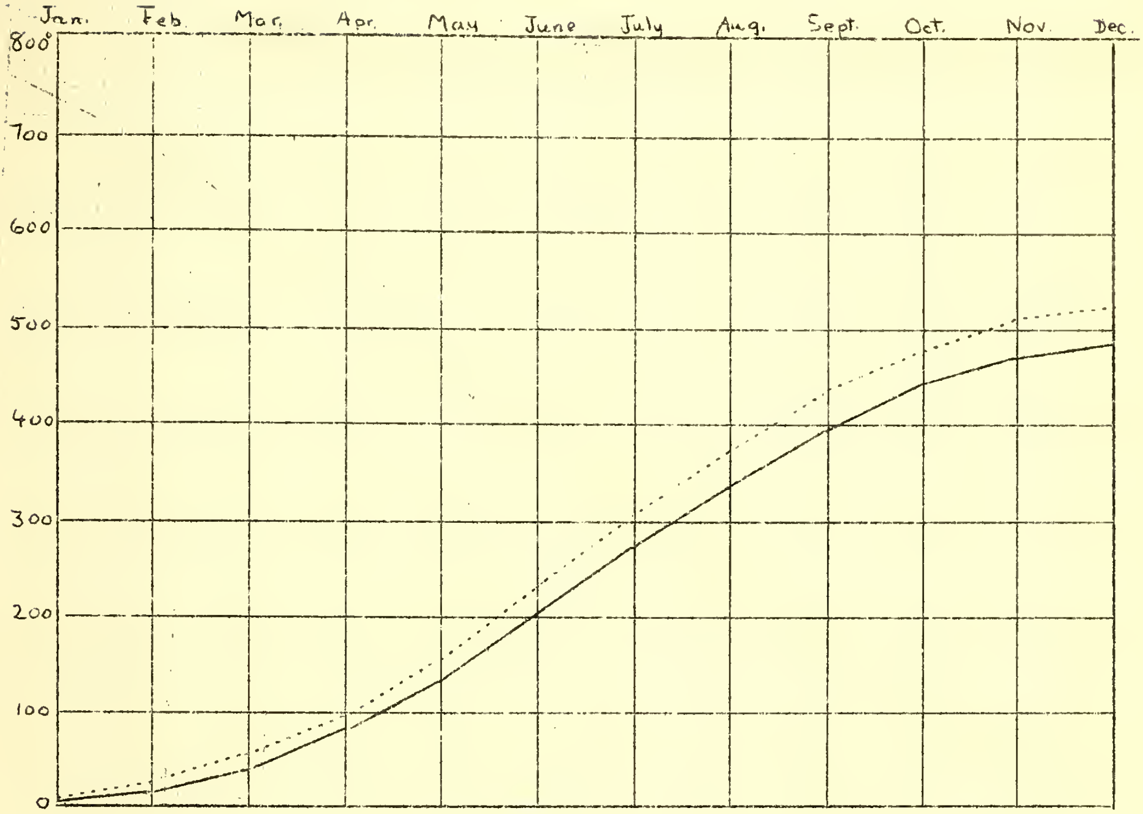

Fig. 13. Accumulated temperature in degrees F. for Bismarck, North Dakota, 1933 (dotted line), compared with normal (solid line).

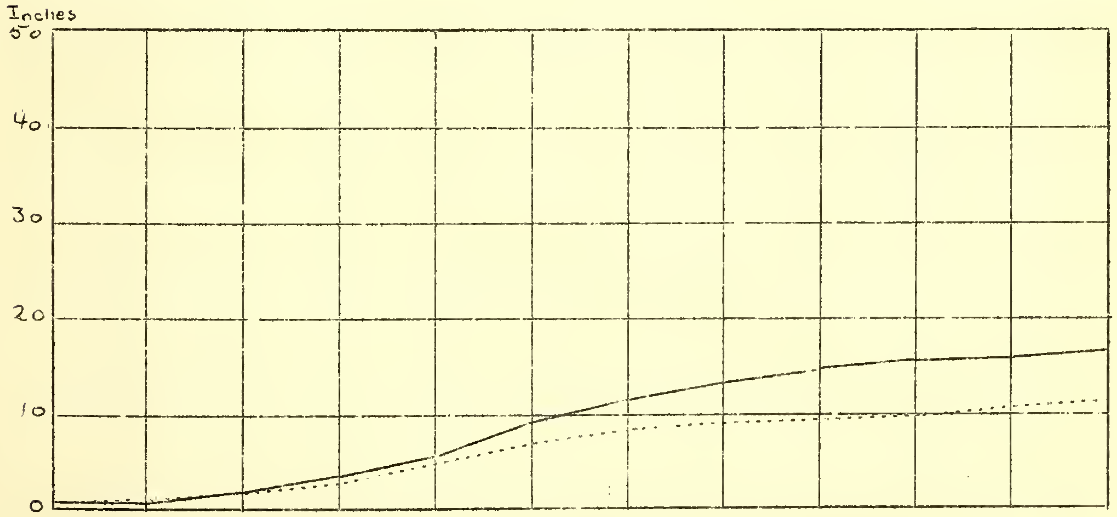

Fig. 14. Accumulated precipitation in inches for Bismarck, North Dakota, 1933 (dotted line), compared with normal (solid line).

LITTLE ROCK, ARKANSAS

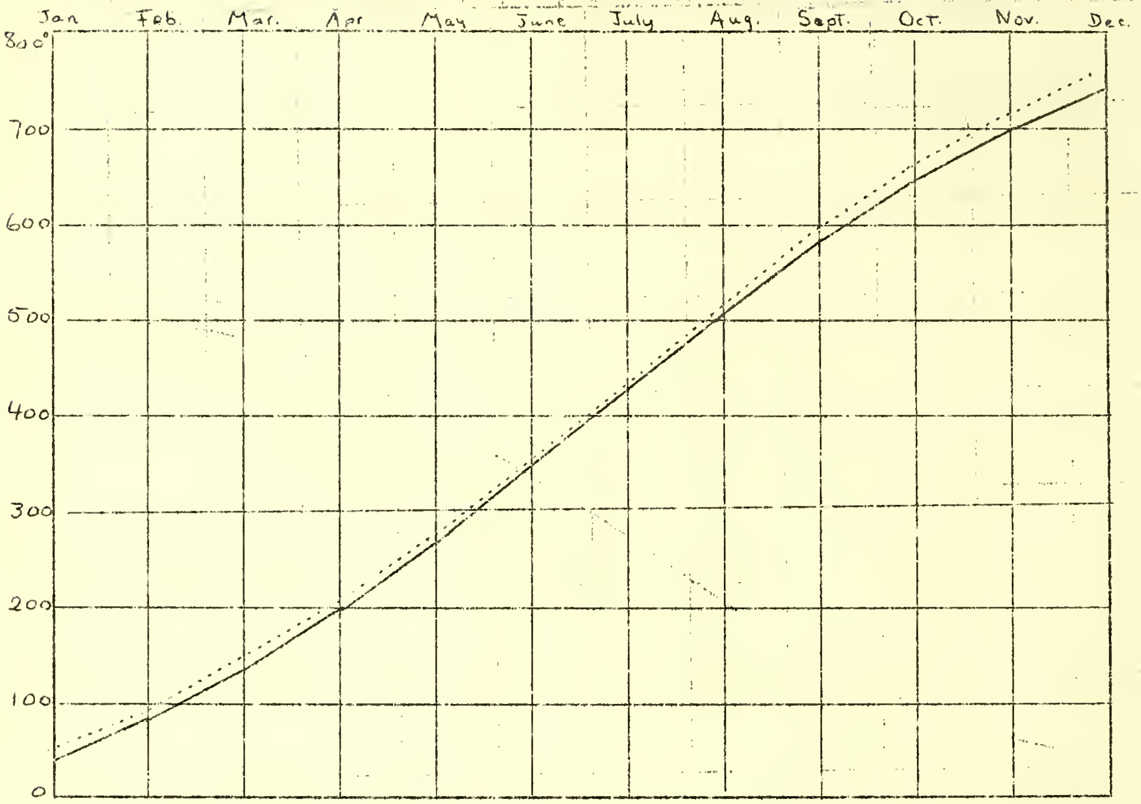

Fig. 15. Accumulated temperature in degrees F. for Little Rock, Arkansas, 1933 (dotted line), compared with normal (solid line).

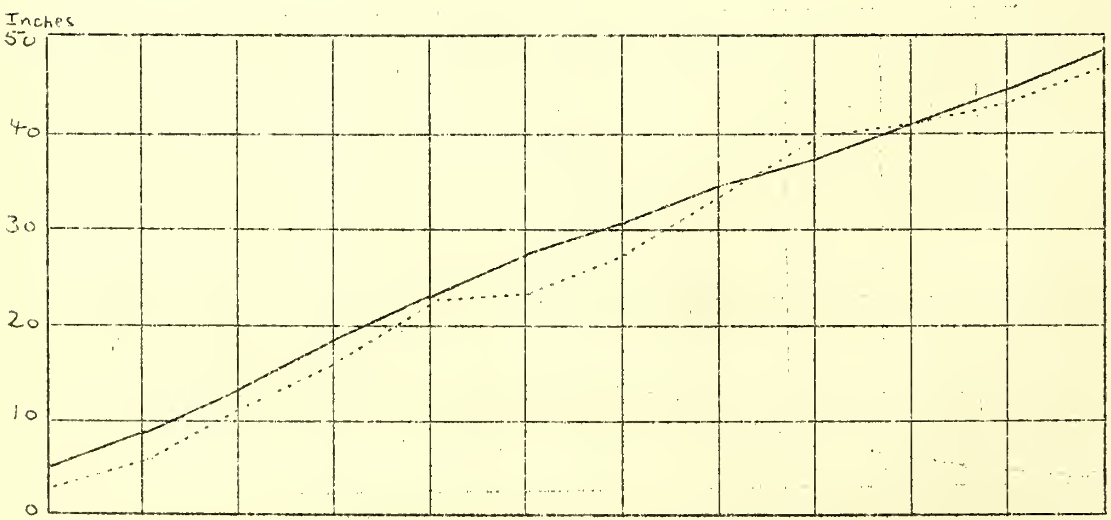

Fig. 16. Accumulated precipitation in inches for Little Rock, Arkansas, 1933 (dotted line), compared with normal (solid line).

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PORTLAND, OREGON

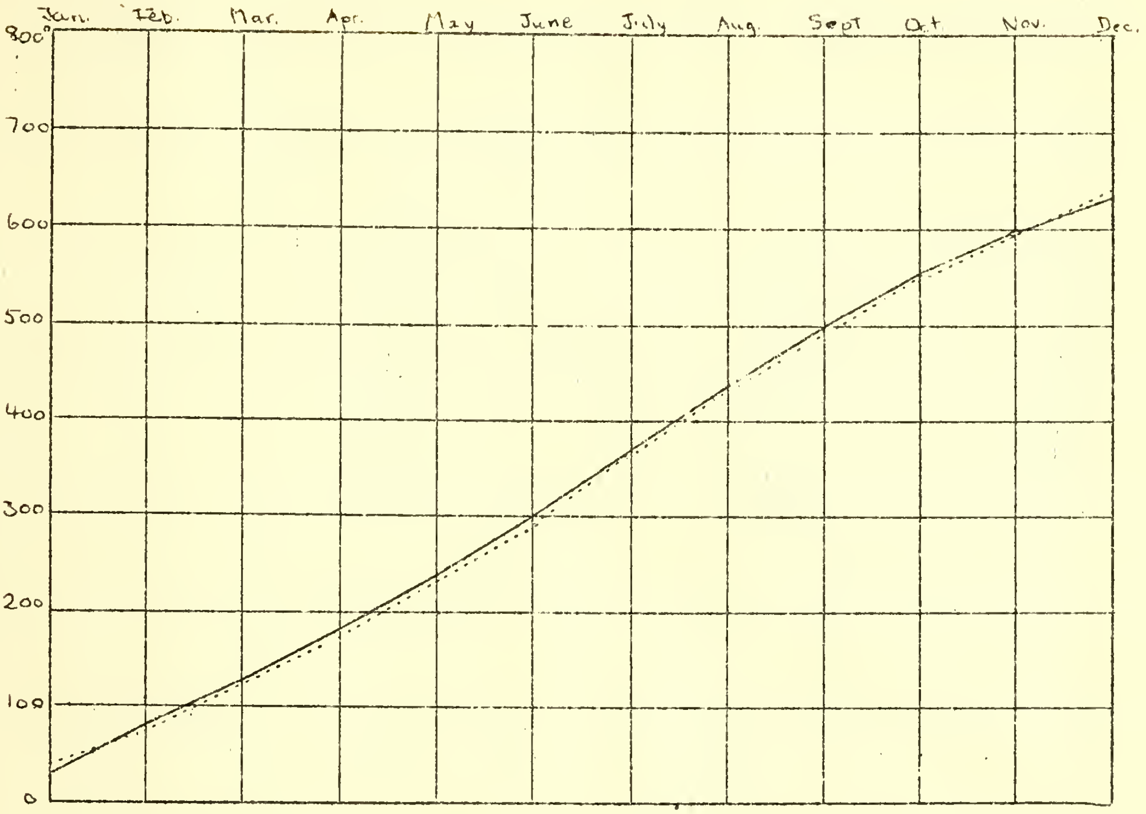

Fig. 17. Accumulated temperature in degrees F. for Portland, Oregon, 1933 (dotted line), compared with normal (solid line).

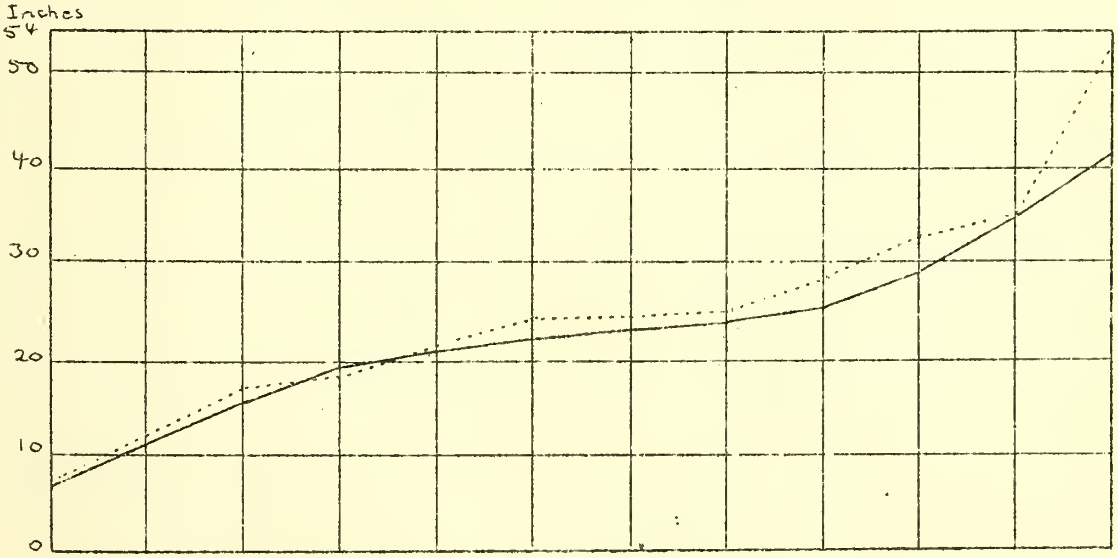

Fig. 18. Accumulated precipitation in inches for Portland, Oregon, 1933 (dotted line), compared with normal (solid line).

SACRAMENTO, CALIFORNIA

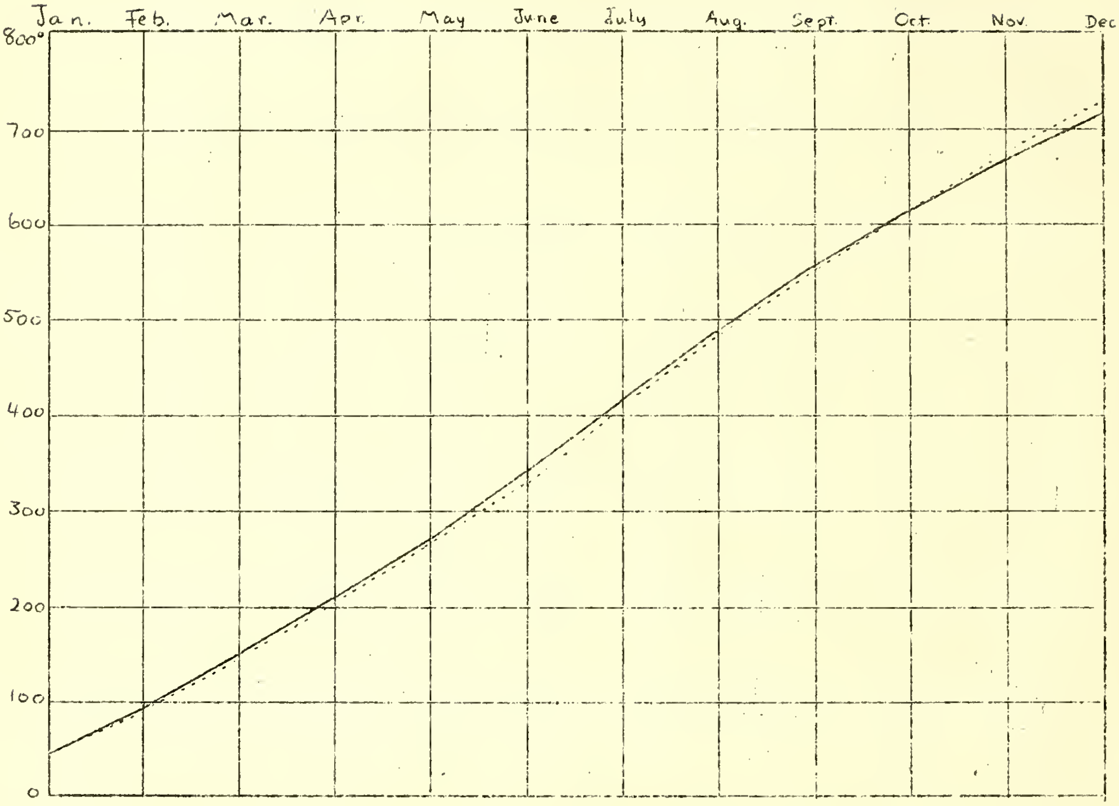

Fig. 19. Accumulated temperature in degrees F. for Sacramento, California, 1933 (dotted line) compared with normal (solid line).

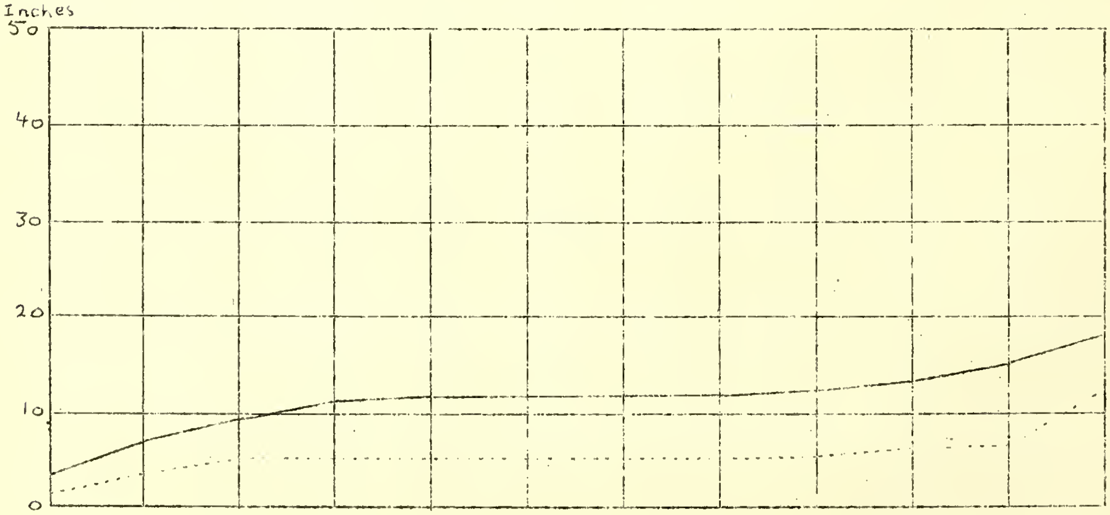

Fig. 20. Accumulated precipitation in inches for Sacramento, California, 1933 (dotted line), compared with normal (solid line).

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DISEASES OF CEREAL CROPS

WHEAT

BUNT (Tilletia levis and T. tritici). In the 18 States reporting occurrence of bunt, the disease was more prevalent than in an average year in but one State, i. e., Michigan, where it was apparently as severe as in 1932, and caused losses ranging from 3 to 15 per cent. A survey of 72 fields of wheat in 12 counties of Pennsylvania showed an average of 0.76 per cent of bunted plants. Maryland reported less bunt than last year, as did, also, Illinois, Minnesota, North Dakota, Kansas, Colorado, and Oregon. Maximum losses ranged from a trace in Illinois and Wisconsin to 0.2 per cent in Iowa, 2 per cent in Colorado, 4 per cent in Missouri, 10 per cent in North Dakota, and 25 per cent in Kansas. The average loss for any one of the 18 States reporting bunt did not exceed 5 per cent, and for all but two others it was less than 3 per cent.

P. A. Young reported the successful overwintering of bunted wheat heads in Montana, stating that the viable spores borne by such heads were a source of infection of spring wheat drilled into stubble fields containing such heads. According to H. P. Barss, there was much winter killing of fall-sown wheat in Oregon. In many instances, the wheat thus destroyed was replaced by spring wheat, and there probably was less bunt than would otherwise have been the case.

The inspection of 24,653 cars of wheat in Minneapolis for the period July to December, 1933, inclusive, showed 3.1 per cent of them "smutty." Of a total of 2,887 cars of durum wheat inspected during the same period, 2.8 per cent graded smutty, whereas, in 1932, 15.5 per cent of the cars of durum wheat inspected in Minneapolis during the period August 1 to December 15 contained smut.

LOOSE SMUT (Ustilago tritici). The prevalence of loose smut in Ohio, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Wyoming, and Colorado was about equal to that of 1932. In Pennsylvania, Maryland, and Indiana, it was somewhat more prevalent than last year and than obtains in an average year. Losses varied from a mere trace, as in Colorado, to as much as 3.8 per cent, as in Pennsylvania, where one field showed as much as 16 per cent. The percentage losses reported for the remaining States from which reports were received, are as follows: Maryland, 1.5; Ohio, 1; Illinois, 1.2; Michigan, 3; Wisconsin, trace; Minnesota, 1; Missouri, 2; North Carolina, 0.5; North Dakota, 0.4; Kansas, 0.1; and Oregon, trace. In North Carolina, loose smut was observed in 41 of 61 fields in 7 counties, with infection ranging from a trace to 4 per cent.

FLAG SMUT (Urocystis tritici). Flag smut was observed by the late Dr. J. A. Faris in Madison County, Illinois, and Leavenworth County, Kansas. Infection amounting to a trace+ was recorded in 4 fields in St. Louis County, Missouri. No new locations were discovered.

STEM RUST (Puccinia graminis tritici). Although stem rust was reported present prior to July 1 in the Midwestern States from the Gulf of Mexico to the Canadian border and in sufficient degree to have resulted in an epidemic, the excessively hot, dry weather of July inhibited urediospore production and germination and hastened the premature ripening of the wheat. There was an abundance of rust infection of the common barberry by June 1, and its spread to nearby grains and grasses was recorded. Weather conditions, however, inhibited its further extension geographically. The abundance of inoculum present during the season as a whole was, however, relatively slight.

Of the 15 States reporting incidence of stem rust, 5 reported it less prevalent and 2 much less so than in 1932, and, with a single exception (Ohio) no State reported an average loss in excess of a trace. Ohio reported a loss of 0.5 per cent.

LEAF RUST (Puccinia triticina). The excessively high temperature and the rainfall deficiency generally prevalent during the 1933 growing season, in all but a few of the States in which wheat production is commercially important, inhibited tremendously the prevalence and severity of leaf-rust infection. In many States, the first appearance of the rust was later than usual and, in others, notably North Dakota, Montana, and Oregon, the severity ranged from a trace to 10 per cent. In Pennsylvania, Maryland and Delaware, where there was more abundant rainfall, leaf rust was more than usually severe, the average infection for Pennsylvania being estimated at 82 per cent. The average loss for the remaining 25 States reporting leaf rust ranged from a trace in Michigan, Minnesota, Iowa, North Dakota, Kansas, Montana, and Oregon to 4 per cent in Maryland and 5 per cent in Indiana. In North Carolina, the infection severity amounted to less than 10 per cent in most cases and nothing at all in others. Tennessee reported "Very abundant in all fields observed," but gave no specific information as to prevalence and severity. Texas reported leaf rust widely prevalent but causing noticeable injury to none but the most susceptible varieties.

STRIPE RUST (Puccinia glumarum) was less prevalent in Montana than in 1932 and somewhat less so than in an average year. Conditions affecting its winter survival apparently were unfavorable throughout its range in the Pacific and intermountain States. In the Flathead Valley, the loss caused by this rust ranged from a trace to 80 per cent. Jones Fife and Jenkin were, as usual, highly susceptible.

SCAB (Gibberella saubinetii). Because of unfavorable weather conditions during blossoming of the host, the losses from scab were relatively unimportant. In Pennsylvania, 91 per cent of the fields inspected showed infection ranging from a trace to 20 per cent. A survey of 72 fields showed an average of 1.5 per cent of the spikelets infected. In 6 of the 11 States reporting incidence of scab, the loss was no greater than that recorded for 1932. In 6, it was less to much less than that of an average year.

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GLUME BLOTCH (Septoria nodorum) was general and severe in Pennsylvania, where it was present in all fields inspected. Twenty-five per cent of the spikelets in those fields bore infection. In Illinois, Indiana, Missouri, and Kansas, the disease was of local distribution, and the losses did not exceed a trace. In Maryland, the loss amounted to 5 per cent. Only 7 States reported any infection whatever. Here, again, the inimical weather conditions undoubtedly affected the prevalence and economic importance of the disease.

SEPTORIA LEAF BLIGHT (Septoria tritici) was reported from Illinois, Indiana, and Oregon. In Illinois, it caused an estimated loss of 0.5 per cent, was "moderately' destructive in Oregon; and, though much more prevalent in Indiana it caused no more than a trace of loss.

BACTERIAL DISEASES: BASAL GLUME ROT (Bacterium atrofaciens) was reported as occurring in Illinois and Kansas. Weather conditions were unfavorable to its development, and the amount of damage was negligible in Kansas. In Illinois, the maximum infection was approximately 1 per cent. BLACK CHAFF (Bacterium translucens undulosum) was recorded for Illinois, Wisconsin, Minnesota, and Iowa. In Iowa, it was more prevalent than in many years past.

TAKE ALL (Ophiobolus graminis). Take all was reported by Hurley Fellows as of scattered occurrence in Kansas, where it caused an estimated loss of 0.5 per cent. He observed no varieties that manifested any resistance to the causative organism. Take all, usually present in western Oregon and Washington, was generally absent in 1933, because of severe winter injury. No other States reported incidence of the disease.

FOOT AND ROOT ROTS. Chief among the causative organisms associated with foot and root diseases of wheat were Helminthosporium sativum, Fusarium spp., Cercosporella herpotrichoides, and Gibellina cerealis. Of these H. sativum was reported from Ohio, Michigan, Wisconsin, Minnesota, Kansas, and Montana. In Montana, it and Fusarium spp. caused serious foot-rot damage in fields of Turkey wheat near Great Falls, according to P. A. Young. In the other States, the damage resulting from these fungi did not average more than a trace. In Washington and Oregon, according to Roderick Sprague, the excessive winter killing in December, 1932, reduced the loss caused by Cercosporella root rot to an amount less than average, except in the Grande Ronde Valley, Oregon, and in the vicinity of Spokane, Washington, where the loss approached that of the record year 1928. Bromus tectorum, Agropyron inerme, A. riparium, and Koeleria cristata were attacked near Liberty Lake, Washington. Sprague reported also the occurrence of foot rot caused by Gibellina cerealis, hitherto recorded only for Italy. It has been under observation for several years along the Oregon coast, where it causes some damage to wheat and oats when grown on somewhat acid soil.

POWDERY MILDEW (Erysiphe graminis). Scattered infections of powdery mildew were reported from New Jersey, Indiana, Michigan, Montana, and Washington. It was locally severe in New Jersey and near Bozeman, Montana.

ERGOT (Claviceps purpurea) was reported as scatteringly prevalent in Ohio, Michigan, Wisconsin, Minnesota, and North Dakota. In the latter State, there was heavy infection in occasional fields of both durum and common varieties.

NEMATODE DISEASE (Anguillulina tritici) was present in North Carolina.

MOSAIC (Virus). Benjamin Koehler and H. H. McKinney inspected several wheat fields in Illinois and found mosaic rosette causing noticeable damage in 5 fields of so-called Hardy Fultz. From 10 to 50 per cent of the plants in these fields were infected. Yellow mosaic was found in the varieties Kharkov, Turkey, and Duffy. Three fields of Turkey, totaling about 45 acres showed mosaic in 10 to 30 per cent of the plants.

RYE

STEM RUST (Puccinia graminis secalis) was reported from New Jersey, Arkansas, Ohio, Illinois, Indiana, Michigan, Wisconsin, and Minnesota. In none of these States, excepting Ohio, was the loss more than a trace. Ohio reported damage amounting to 0.5 per cent. Wisconsin reported this rust destructive only near infected barberry bushes.

LEAF RUST (Puccinia dispersa). This rust was generally distributed throughout Indiana and Minnesota, of scattered distribution in Massachusetts, Florida, and Connecticut, and local in Wisconsin and Oregon. In Massachusetts, Florida, Ohio, and Indiana, the loss from leaf rust ranged from 1 to 5 per cent. Elsewhere, it did not average more than a trace. One field in Illinois showed a maximum of 100 per cent severity.

ERGOT (Claviceps purpurea). Ergot was reported prevalent in Massachusetts, Ohio, Michigan, Wisconsin, Minnesota, Iowa, and North Dakota. In Wisconsin and Minnesota, it was more than usually so, causing in the one an estimated loss of 2.5 per cent and in the other, 1 per cent. Elsewhere, there was no more than a trace, except in Ohio, where the loss was estimated at 0.1 per cent.

STEM SMUT (Urocystis occulta) was observed in Anderson County, Tennessee, by P. R. Miller, in a single field in Shelby County, Indiana, and in Minnesota.

SCAB (Gibberella saubinetii). Scab on rye was reported from Ohio, Wisconsin, and Illinois. In Ohio, it caused an estimated loss of 1 per cent; in Illinois, 3 per cent. Weather conditions were unfavorable for general incidence of scab infection.

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POWDERY MILDEW (Erysiphe graminis) was observed in Connecticut, New Jersey, and Michigan. Reported as severe in many New Jersey fields.

ANTHRACNOSE (Colletotrichum cereale). Scattered infections in Illinois and Wisconsin.

SPOT BLOTCH (Helminthosporium sativum); traces in Michigan.

BARLEY

COVERED SMUT (Ustilago hordei). General distribution of covered smut was reported from Illinois, Minnesota, and North Dakota. Scattered infections were observed in Delaware, Maryland, Tennessee, Georgia, Ohio, Michigan, Wisconsin, Iowa, Kansas, Colorado, Arizona, Oregon, and Washington. Losses were estimated as follows: Maryland, 8 per cent; Michigan, 1; Minnesota, 0.5; Iowa, 0.2; North Dakota, 0.5; and Kansas, 0.5. The maximum infection observed anywhere was 57 per cent in Illinois. The losses caused by this smut were, in general, about equal to those recorded in any average year. Delaware, Ohio, Michigan, Wisconsin, and Colorado reported less than average.

LOOSE SMUT (Ustilago nuda). Loose smut was reported as of general distribution in Illinois, Wisconsin, Minnesota, North Dakota, and Kansas. Other States reporting this smut were New Jersey, Maryland, Virginia, North Carolina, Arkansas, Ohio, Michigan, Iowa, Colorado, and Oregon. Losses ran from a trace in New Jersey and Colorado to 0.5 per cent in Michigan and North Dakota; 1 per cent in Minnesota, Ohio, and Maryland; 1.5 per cent in Illinois; 2 per cent in Kansas; and 2.5 per cent in Wisconsin. Maximum infections were reported as follows: North Carolina, 10 to 20 per cent; Wisconsin, 20 per cent; Minnesota, 10; and Illinois, 6. In Kansas, loose smut continues to cause greater losses than any other disease of barley.

STEM RUST (Puccinia graminis tritici) was relatively unimportant. It was generally less prevalent than last year and in an average year, except in Minnesota, where there was more than usual, an occasional field showing infections of from 50 to 75 per cent. Losses were reported from Maryland, Illinois, Minnesota, Iowa, Michigan, North Dakota, Wisconsin, and Colorado as no more than a trace. In Ohio, there was an estimated loss of 1 per cent. The weather conditions were everywhere inimical to the development and spread of stem rust.

LEAF RUST (Puccinia anomala) was reported from Maryland, New Jersey, Arkansas, Ohio, Illinois, Michigan, Wisconsin, Minnesota, Kansas, Colorado, and Oregon. Losses ranged from a trace to 0.5 per cent. Maximum infections of 70 (Minnesota) and 100 per cent (Illinois) were recorded.

STRIPE (Helminthosporium gramineum). The presence of stripe was reported from Maryland, North Carolina, Illinois, Wisconsin, Minnesota, North Dakota, Kansas, and Colorado. It was more than usually severe in Maryland, where it caused an estimated loss of 1 per cent. In North Carolina, losses in a few fields were as much as 30 to 47 per cent. Elsewhere, the losses ranged from a trace in Colorado to as much as 3 per cent in Iowa. The following varieties were apparently resistant: Wisconsin 37 and 38, Peatland, Minsturdi, and Svansota. Trebi was reported as immune at University Farm, Minnesota.

SPOT BLOTCH (Helminthosporium sativum). Spot blotch was reported prevalent in Michigan (trace), Wisconsin (1 per cent), Minnesota (2 per cent), Iowa (5 per cent), and North Dakota (trace). It reached epidemic proportions in Cass County, North Dakota, and caused a great deal of leaf spot on leaves and glumes in Wisconsin. Symptoms on glumes are easily confused with those of scab, agar or blotter cultures often being necessary to distinguish the causative organism. In Iowa, the spot blotch of the leaves often was accompanied by a well defined foot rot possibly attributable to H. sativum.

SCAB (Gibberella saubinetii) was of little economic consequence, the damage amounting in no instance to an estimated 3 per cent. It was reported present in New Jersey, Maryland, Ohio, Illinois, Michigan, Iowa, and Wisconsin. According to R. E. Vaughan, its occurrence in Wisconsin was limited to a few fields in the southern counties. "Fall plowing of corn ground and high temperatures with low humidity in June cut down infection." In Illinois, 310 carloads of barley from 30 counties graded "scabby."

ERGOT (Claviceps purpurea). Ergot was unusually prevalent in Illinois, Wisconsin, Minnesota, and North Dakota. The loss occasioned by it was in no State, except Wisconsin, more than a trace. Wisconsin reported 0.5 per cent. In Minnesota many samples from the Red River Valley contained from a trace to 0.5 per cent. North Dakota reported more ergot in the Red River Valley than had occurred there since 1923. In Wisconsin, the hot, dry season hastened blossoming and brought the plants into the infection period while they were in bloom. Ergot was especially severe where the grain was fertilized to further hasten maturity.

POWDERY MILDEW (Erysiphe graminis). Traces of powdery mildew were reported from Connecticut, New Jersey, Maryland, Illinois, and Wisconsin.

SCALD (Rhynchosporium secalis) was reported locally prevalent in Wisconsin and sparsely so in Oregon. Its development in Wisconsin was greatly inhibited by drought. Its scattered incidence in Oregon is attributed to the severe freezing weather of December, 1932. In neither State was the damage more than a trace.

BACTERIAL BLIGHT (Bacterium translucens). There was an unusually severe outbreak of this disease in Illinois in 1933. Its marked development was coincident with the unusually wet weather of May. Some barley

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fields were nearly ruined. Leaves showed the characteristic stripe with exudate. Young plants 6 or 8 inches in height showed much exudate at leaf bases, where leaves are close-packed together. Many plants died in this condition. It was not conclusively established that this severe attack of the leaf bases were caused by B. translucens.

OATS

SMUTS, LOOSE AND COVERED (Ustilago avenae and U. levis). Losses caused by smut were approximately equal to those recorded for 1932. Reports were received from 22 States, with average losses ranging from 1 to 10 per cent. The value of seed treatment is now well and widely known among farmers, but treatment costs money, a commodity too many do not have after a long, lean winter. The low price paid for oats in 1933 put no premium on seed treatment, hence occasional losses of 12 to 50 per cent were not uncommon. Percentage losses were estimated as follows: Massachusetts, 10; North Carolina, 9; Kansas and Wisconsin, 6 each; Illinois, 5.5; Iowa, 5; Maryland, 5; Florida and Ohio, 4 each; Missouri, 3; Minnesota, 2; Michigan, 1; and North Dakota, 0.5.

STEM RUST (Puccinia graminis avenae) was reported prevalent in 16 States, in all but 2 of which it was less prevalent than last year and generally less to much less than in an average year. The unusually hot, dry weather in the principal oat-growing States and, in some instances, a scarcity of initial inoculum were chiefly responsible for the relatively insignificant damage from this rust. Although occasional fields in Minnesota, Illinois, and Oregon showed as much as 50 per cent severity or more, the average loss in but two States - Ohio and Michigan - was as much as 0.5 per cent. Elsewhere, the average loss did not exceed a trace.

CROWN RUST (Puccinia coronata). Because of heat and drought, damage resulting from crown rust was of little importance except in Florida, where the loss was estimated at approximately 30 per cent, and in Hyde County, North Carolina, where the loss was 33 per cent. Estimates from other States follow: Indiana, 3 per cent; Maryland, 2; Missouri, 1; Illinois, 0.5; elsewhere, a trace or less.

FOOT ROT (Helminthosporium spp. and Fusarium sp.) was observed in Iowa, Michigan, and Oregon. Fusarium foot rot was severe in the Astoria (Oregon) region, where it caused irregular stunted patches.

SCAB (Gibberella saubinetii). Observed in Maryland, Ohio, Wisconsin, and Illinois.

HALO BLIGHT (Bacterium coronafaciens) was reported from Randolph County, Illinois.

BLAST (Cause unknown) was reported as of some economic importance in Kansas and North Dakota, where it caused an estimated loss of 0.5 per cent.

C O R N

SMUT (Ustilago zeae). Of the 23 States reporting incidence of corn smut, 4 reported more and 1 much more than last year and also than for an average year. Percentage losses were estimated as follows: Iowa, 6; Massachusetts, Ohio, and Michigan, 5; New York, 2 to 4; Kansas, 3; North Dakota, 2; Illinois, 1.5; Missouri, 1; Florida and Maryland, each 0.5. In Georgia, the percentage of ear infection was unusually high, a field of Late Prolific showing as much as 50 per cent. In Iowa and Wisconsin, sweet corn was more severely affected than were varieties of field corn.

RUST (Puccinia sorghi). Rust was reported as sparsely to generally prevalent in 14 States; in only two (Florida, 3 per cent and Massachusetts, 1 per cent), however, was the average loss more than a trace. Maximum infections of 75, 70, and 25 per cent were recorded in Florida, Massachusetts, and Minnesota, respectively. According to J. H. Miller reporting for Georgia, rust is of late incidence and causes some injury to the fodder.

ROOT, STALK, AND EAR ROTS (Various organisms).

ROOT ROTS. Disease very severe in North Carolina fields deficient in potash. Data taken in 49 fields in 24 Illinois Counties showed an average infection of 10 per cent. Elsewhere, root rot caused losses averaging 5 per cent in Florida, 1.5 per cent in Missouri, and 0.5 per cent in Michigan.

STALK ROTS, were reported from Maryland, North Dakota, and Arizona.

EAR ROTS. Ear rots were observed in the following States: Florida, Massachusetts, Iowa (Gibberella saubinetii), Illinois and Missouri (various organisms), Maryland, New Jersey, Mississippi, Iowa, Wisconsin, Michigan, and New Hampshire (Fusarium moniliforme).

BLACK BUNDLE (Cephalosporium acremonium) was observed in Indiana (trace) and in Illinois (4 per cent).

BASISPORIUM DRY ROT (Basisporium gallarum) was reported from Iowa (1.5 per cent), Wisconsin (0.5 per cent) and Illinois (5 per cent).

DIPLODIA DRY ROT (Diplodia zeae). This disease was reported prevalent in Florida (3 per cent), Iowa (4), Ohio (1), Indiana (2.5), Michigan (0.5), Illinois (2.8), Mississippi, and Missouri. D. frumenti and D. macrospora were also reported from Florida, the former with a loss of 1 per cent, the latter of 3 per cent.

BROWN SPOT (Physoderma zeae-maydis). Reported from Missouri (trace), Arkansas, Louisiana, Mississippi, Georgia, and Florida (4 per cent).

BACTERIAL WILT (Aplanobacter stewarti) established, in 1932, what was until then an all-time record for distribution and severity. The climatic

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and biological conditions together combined to bring about a maximum of infection and damage. There was a like, if not a more favorable, combination of conditions in the crop season of 1933, with the result that, in comparison with 1932, there was more infection in Massachusetts, Connecticut, New Jersey, West Virginia, Arkansas, Illinois, and Missouri, and much more in New York. The disease also caused considerable losses in New Hampshire and in southern Maine, where it had never been known to occur previously. In Indiana and Ohio only was there less than in the previous year. Average percentage loss estimates were as follows: New York 10 to 12 per cent; Indiana, 10; Massachusetts 10; Iowa, 5; Missouri, 2; Arkansas and Maryland, trace. Maximum infections of 75 to 100 per cent were reported for occasional plantings of sweet corn in Maine, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Illinois, and Indiana. The United States Department of Agriculture strains selected by Smith at Purdue were almost as susceptible in New York State as the more common strains during the seedling stage but gradually became more resistant, so that, by harvest time, the Golden Cross Bantam and other strains showed considerably more resistance than common strains. In Cayuga County, where flint corn is grown for seed, many fields showed from a trace to 10 per cent. In southern New York some early-planted fields of Golden Gem or other extra early yellow sweet corn were almost completely destroyed. Late planting helped reduce the percentage of injury.

SORGHUM

HEAD SMUT (Sorosporium reilianum) was reported as having occurred in New Jersey and Wisconsin. Damage negligible.

KERNEL SMUT (Sphacelotheca spp.) Reported from Colorado (trace) and Kansas, where, in fields planted to nontreated seed, the infection ran from 5 to 25 per cent.

RICE

STEM ROT (Leptosphaeria salvinii [Sclerotium oryzae]).Reported in Arkansas, Louisiana, Texas, and California.

LEAF SPOT (Ophiobolus Miyabeanus [Helminthosporium oryzae]). Reported in Arkansas, Louisiana, and Texas.

SMUT (Tilletia horrida). Reported in Arkansas and Louisiana.

LEAF SMUT (Entyloma oryzae). Reported in Arkansas, Louisiana, and Texas.

LEAF SHEATH ROT (Ophiobolus oryzinus). Reported in Arkansas and Louisiana.

ROTTEN NECK (Piricularia grisea). Reported in Arkansas and Louisiana

ROOT DISEASE - NEMATODE (Heterodera marioni). Reported in Arkansas.

STRAIGHTHEAD (Nonparasitic). Reported in Arkansas and Texas.

FLAX

WILT (Fusarium lini). Flax wilt was prevalent in Wisconsin, Minnesota, and North Dakota to approximately the same extent as last year. Losses were of no importance except in North Dakota, where there was an estimated yield depreciation of 1 per cent.

RUST (Melampsora lini) was reported as locally prevalent in Wisconsin, Minnesota, North Dakota, and Oregon. Of mild severity.

PASMO (Phlyctaena linicola). Wisconsin and Minnesota.

DISEASES OF FORAGE CROPS

ALFALFA

DOWNY MILDEW (Peronospora trifoliorum) was prevalent in Massachusetts, New Jersey, West Virginia, Washington, and Wisconsin. Of little importance in 1933.

BACTERIAL WILT (Aplanobacter insidiosum). Reports were received from only a few of the many States in which bacterial wilt is known to be important. Losses were estimated at 7 per cent in Massachusetts and 15 per cent in Oregon. C. W. Hungerford, reporting from Idaho, states: "Winter injury has also been very common with alfalfa and, as usual following a severe winter, we have had a considerable amount of injury from bacterial wilt. Wilt losses are limited largely to the areas along the Snake River Valley from Cassia County to the Oregon line." Certain Turkestan selections showed some resistance. In California, wilt continues as the most destructive alfalfa disease in the southern Sacramento Valley and in the valleys of the Antelope and Mojave Rivers. The disease is serious in eastern and central Oregon and is reported from southern Oregon. Minnesota and Wisconsin also reported occurrence of wilt.

LEAF SPOT (Pseudopeziza medicaginis) was reported from California, Connecticut, Michigan, Minnesota, Missouri (0.5 per cent loss), New Jersey, North Dakota, Pennsylvania, and Wisconsin. Damage in all but Missouri was a trace or less. Conditions were unfavorable because of dry weather.

STEM ROT (Sclerotinia trifoliorum). Stem rot occurred in West Virginia, Virginia, and Kentucky. It was notably less prevalent than last year. In West Virginia it was said to be most severe in fields on the best soils.

SOUTHERN BLIGHT (Sclerotium rolfsii). In Georgia.

ROOT ROT (Phymatotrichum omnivorum) caused 25 per cent reduction in yield in Texas.

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ANTHRACNOSE (*Colletotrichum destructivum*). In Kentucky.

RUST (*Uromyces medicaginis*) was reported present in California, Texas, and New Jersey. Unimportant and of local occurrence.

BLACK STEM (*Phoma medicaginis*). Reported by Valleau as occurring in Kentucky where stands were much reduced soon after resumption of spring growth. This was particularly the case where heavy stands of alfalfa of the previous fall were left to serve as a winter cover.

YELLOW BLOTCH (*Pyrenopeziza medicaginis*). Minnesota.

PLEOSPHAERULINA DISEASE (*Pleosphaerulina briosiana*) caused almost complete killing of large areas in Tennessee. Other areas were defoliated.

YELLOWS (Leaf hopper, *Empoasca fabae*) was reported from New Jersey, West Virginia, Wisconsin, and California. In some New Jersey fields it was severe.

DWARF (cause unknown). J. L. Weimer reported that this disease is limited in distribution to southern California and the southern part of the San Joaquin Valley. Where it occurs it is equally as destructive as the bacterial wilt. As high as 60 per cent of natural infection was found in November in some plants transplanted to the field in rows in the spring. Five to 10 per cent infection in new stands is common. Many rows of alfalfa in plot experiments have 25 to 50 per cent of infected plants at the end of their second summer and some 3-year-old rows have only an occasional healthy plant left.

WITCHES' BROOM (? virus). Washington.

CLOVER

POWDERY MILDEW (*Erysiphe polygoni*) was generally less prevalent than in 1932 and than in an average year. It was reported from Delaware, Connecticut, Tennessee, Wisconsin, Minnesota (the only State reporting more than last year), and Missouri. Losses were apparently inconsequential.

ANTHRACNOSE (*Colletotrichum trifolii*). Missouri. Average loss, a trace.

O'GARA'S ANTHRACNOSE (*Colletotrichum destructivum*). Kentucky. Valleau reported it to be rather common as a leaf spot. He had isolated the organism from sweet clover and red clover.

NORTHERN ANTHRACNOSE (*Kabatiella caulivora*) was much more prevalent in Delaware than in 1932 or in an average year. Reported also from Kentucky, where, according to Valleau, it caused death of leaves by attacking the petioles. Elsewhere, not observed.

STEM ROT (*Sclerotinia trifoliorum*). New Jersey and Kentucky. In the latter State, it was reported as very active on fall-sown red clover. Very abundant in fall of 1932; again, in January and February, 1933, and in April and May.

RUST (*Uromyces* spp.) Massachusetts, Connecticut, New Jersey, Minnesota. Of little importance.

BLACK STEM (*Phoma* sp.) Kentucky, where stands of red clover were completely destroyed in early spring. This is a major cause of failure of European red clovers in Kentucky. It attacks new leaves and petioles, destroying them almost as fast as they appear.

SOOTY SPOT (*Phyllachora trifolii*). New Jersey (little importance) and Missouri (trace).

LEAF SPOT (*Pseudopeziza trifolii*).New Jersey (severe in some fields) Tennessee, and Washington.

SEPTORIA LEAF SPOT (*Septoria trifolii*). New Jersey.

CERCOSPORA LEAF SPOT (*Cercospora medicaginis*). New Jersey.

SWEET CLOVER

BLACK STEM (*Ascochyta lethalis*). Reported only from Kentucky, where it appeared as a severe leaf spot, frequently destroying all foliage and so attacking young shoots that the plants died. Particularly bad in heavy stands.

ANTHRACNOSE (*Colletotrichum destructivum*). Kentucky.

SPRING DYING (Pythium-like fungus). Kentucky. In this and neighboring States to the north according to Valleau, sweet clover has gone into the winter in good condition but, shortly after resumption of spring growth, the stands have rather quickly disappeared. Infection apparently occurs at the ground line, in the tap root of slightly heaved plants, and sometimes in new shoots. A Pythium-like fungus was isolated and its pathogenicity was proved. Specimens from Ohio and Illinois yielded the same fungus. Apparently widespread and may cause extensive damage.

ROOT ROT (Undetermined). Illinois, important in southern part of State. Also reported from Minnesota. Identity of this and the Illinois disease not yet established.

COWPEA

WILT (*Fusarium vasinfectum tracheiphilum*) was reported as here-and-there prevalent in Missouri, confined mostly to southeastern Missouri lowlands. Observed also near Athens, Georgia, and in Coastal plain counties of North Carolina, where it is yearly very important.

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DRY ROOT ROT (Fusarium martii phaseoli). Mississippi.

ROOT KNOT (Heterodera marioni). Locally prevalent in Missouri and North Carolina. In Georgia, it caused an average loss of 0.3 per cent; confined largely to lowlands of southeastern part of State. In North Carolina most commonly observed in Coastal Plain area.

DOWNY MILDEW (Erysiphe polygoni). Very serious in both northern and southern Georgia, where it caused much late defoliation.

RHIZOCTONOSIS (Rhizoctonia sp.). Louisiana.

CERCOSPORA LEAF SPOT (Cercospora sp.). New Jersey.

MOSAIC (Virus). Palermo, New Jersey. Almost 100 per cent infection.

SOYBEANS

SOUTHERN BLIGHT (Sclerotium rolfsii). Locally serious in Georgia; here-and-there prevalent in Mississippi.

BACTERIAL SPOT (Bacterium phaseoli sojense) was generally prevalent in Delaware.

CERCOSPORA LEAF SPOT (Cercospora cruenta). Locally prevalent in Mississippi.

SEPTORIA LEAF SPOT (Septoria glycines). Generally prevalent in Delaware.

ROOT KNOT (Heterodera marioni). North Carolina.

ASHY STEM BLIGHT (Macrophomina phaseoli). Locally prevalent in North Carolina.

MOSAIC (Virus). New Jersey.

LESPEDEZA

RUST (Uromyces lespedezae -procumbentis). Alabama.

ROOT KNOT (Heterodera marioni). Maryland.

STEM ROT (Sclerotium rolfsii) on Korean Lespedeza, L. stipulacea, in North Carolina.

MEDICAGO LUPULINA

RUST (Uromyces striatus). Alabama.

AUSTRIAN WINTER PEA

LEAF SPOT (*Ascochyta pisi*). Georgia. This disease caused marked defoliation during maturation of the seed.

SUNFLOWER

RUST (*Puccinia helianthi*). Wisconsin. Too late to cause much damage.

MILDEW (*Erysiphe cichoracearum*). Wisconsin. Generally prevalent.

LEAF NEMATODE (*Anguillulina balsamophila*). Washington; collected and identified by W. D. Courtney. First recorded occurrence on sunflower.

GRASSES

SMUTS. *Ustilago striaeformis* on *Lolium perenne*. Oregon.

U. cynodontis on Bermuda grass, *Capriola dactylon*. Arizona.

U. rabenhorstiana on crab grass, *Syntherisma sanguinalis*, in Georgia, where this grass is cut for hay. Several fields near Athens badly smutted.

U. bromivora on *Agropyron* sp. Washington (State).

U. hypodytes on Quincy grass. Winchester, Washington.

RUSTS. *Puccinia coronata* on *Lolium perenne*. Alabama; hitherto unreported.

Uromyces hordeinus on *Hordeum pusillum*. Alabama.

U. halstedii on *Homalocenchrus virginicus*. Alabama.

P. purpurea on *Holcus halepensis*. Alabama.

U. eragrostidis on *Eragrostis capillaris*. Alabama; hitherto unreported.

U. spermacoces on *Diodia teres*. Alabama; hitherto unreported.

P. andropogi on *Andropogon scoparius*. Alabama.

P. graminis agrostidis on *Agrostis alba*. Connecticut.

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SEPTORIOSES. Undetermined species of Septoria were said to be of some importance in Oregon on Poa pratensis, Bromus marginatus, B. hordeaceus, and B. commutatus; and were also reported on Agrostis maritimus, Notholcus lanatus, Poa compressa, Poa sandbergii, and Sitanion hystrix.

CERCOSPORELLA FOOT ROT (Cercosporella herpotrichoides) occurred in Washington on Koeleria cristata, Bromus tectorum, Agropyron riparium, and A. inerme.

HELMINTHOSPORIUM LEAF SPOT (Helminthosporium sp.) on blue grass in Kentucky (caused extensive yellowing of the grass).

HELMINTHOSPORIOSIS (Helminthosporium triseptatum) on Notholcus lanatus. Oregon. Weakly parasitic on dying leaves of the grass growing in acid soil. Locally very abundant.

NEMATODE (Anguillulina graminophila) on Agrostis tenuis. Oregon. Bent grass heavily infested near Corvallis.

SCOLECOTRICHUM DISEASE (Scolecotrichum graminis) on Phleum pratense. Oregon. Present on many species of grasses. The severe freeze of February predisposed surviving plants to this fungus.

ENLARGED HEADS (Pediculopsis graminum plus undetermined fungus) on Agropyron spp. in Washington.

HETEROSPORIUM LEAF SPOT (Heterosporium phlei) on Timothy, Phleum pratense. In Washington; hitherto unreported.

DISEASES OF FRUIT AND NUT CROPS

APPLE

SCAB (Venturia inaequalis) was reported from 27 States in 5 of which it was more prevalent than in 1932 and in 5 others it was much more prevalent. In but 3 - Iowa, Kansas, and Montana - was it less prevalent. Eleven reported it more to much more prevalent than in an average year. Those States reporting losses of 5 per cent or greater were: Indiana, 50; Illinois, 40; Virginia, 25; Michigan, 25; Maryland, 15; Ohio, 12; Wisconsin, 12; and Massachusetts, 5. Ascospore discharge was early in those States where heaviest infection was experienced: West Virginia, April 11; Delaware, April 4; Michigan, April 17. Spring rains and mild temperature favored early and widespread infection.

BLOTCH (Phyllosticta solitaria) was reported to be present in Maine, New Jersey, Delaware, Maryland, Virginia, Kentucky, Mississippi, Arkansas, Ohio, Illinois, Indiana, Wisconsin, Missouri, and Kansas. It was much more prevalent in Delaware than last year or than in an average year. Average losses ranged from a trace in Virginia to 3 per cent in Missouri and Illinois but attained no commercial importance in properly sprayed orchards.

RUST (*Gymnosporangium* spp.) was reported widely prevalent in Connecticut favored by early wet spring. It ceased to be important to the average orchardist of northern Virginia and northeastern Kansas with elimination of cedars near orchards. Elsewhere in Virginia, many orchards were more seriously rusted than usual. Average losses ranged from a trace in Minnesota and Iowa to 8 per cent in Virginia and 5 in Massachusetts and 1 per cent in Indiana and Missouri, with a maximum loss in individual orchards amounting to 40 to 44 per cent in Massachusetts and Virginia. In Virginia and Indiana, quince rust (*G. germinale*) was observed on apple. The hawthorn rust (*G. globosum*) was reported from Connecticut.

BLACK ROT (*Physalospora obtusa* [*Sphaeropsis malorum*]) was more prevalent than last year in Massachusetts, Connecticut, Virginia, and Missouri. Elsewhere, there was the usual prevalence or less. Average losses were recorded as follows: Ohio, 3 per cent; Maryland, 2.5; Virginia, 2; Missouri, 1.5; Massachusetts, 1; Indiana, 0.5; elsewhere, a trace or less.

BLIGHT (*Bacillus amylovorus*) was reported as more or less prevalent in 26 States. In 6, it was more widespread and severe than in 1932, while in 9 it was less so. In New York, where it was severe to slight in 50 counties, many orchards suffered an almost total blossom blight, followed by profuse twig blight and a consequent loss of crop for the season and of fruit spurs for following crop seasons. In Massachusetts, more blossom blight was observed than in any other season. Average percentage losses were reported as follows: Wisconsin, 5; Missouri, 3; Massachusetts, 2; Virginia, 1.5; North Dakota, 1.5; Iowa, 1; Maryland, 1; Ohio, 0.5; elsewhere a trace or less. Maximum losses of 20, 20, 35, and 50 per cent were reported for individual orchards in Massachusetts, North Carolina, Missouri, and Minnesota, respectively.

CROWN GALL (*Bacterium tumefaciens*) was reported from New Jersey, Maryland, Mississippi, Wisconsin, Missouri, and Kansas.

POWDERY MILDEW (*Podosphaera leucotricha*) was scatteringly present in New York, New Jersey, Virginia, Georgia, and Washington. In Georgia, certain varieties, especially Rome Beauty, were so severely attacked as to cause death of fruit spurs and tips of young twigs.

FRUIT SPOT (*Mycosphaerella pomi*). Reported more or less prevalent in Maine, Massachusetts, New Jersey, Maryland, Kentucky, Arkansas, and Ohio and generally prevalent in Delaware, where the varieties Grimes Golden, Stayman Winesap, Jonathan, and Paragon were affected.

BITTER PIT (Undetermined) was reported more to much more prevalent than usual in New Hampshire, Delaware, Virginia, West Virginia, North Carolina, and Wisconsin. Groves wrote that bitter pit appeared rather late in Virginia, but losses due to it were more severe in some orchards than from any other disease. He estimated an average loss of 2 per cent for the State. In North Carolina, according to Poole, bitter pit was especially severe in areas where the drought was most pronounced and where the trees

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bore heavily. Vaughan in Wisconsin stated that more specimens had been received than for several years, due apparently to irregular rainfall and low soil moisture. On the other hand, bitter pit was said not to be serious in western New York in 1933, and less than usual was reported in Maryland.

SOOTY BLOTCH (Gloeodes pomigena). Sooty blotch was generally prevalent in Delaware, Maryland, and Mississippi and locally to scatteringly so in New Jersey and Connecticut. In New Jersey, it was "very severe" on Winesaps.

FLY SPECK (Leptothyrium pomi). Maryland, North Carolina, Wisconsin, and Mississippi. Caused very little damage.

BLISTER SPOT (Bacterium papulans). A mild outbreak of this obscure disease was observed during the week of July 29, 1933, on well sprayed Stayman Winesap trees at the University of Arkansas Farm, Fayetteville, Arkansas. The infections were more numerous on the south side of the tree. Occasional specimens were observed in various commercial orchards in 1931. The disease was not observed in 1932 and the 1933 outbreak was the first observed where more than an occasional apple was found to be infected. (John C. Dunegan).

CANKER (Myxosporium corticolum) is usually not injurious, but in New Jersey it was said to be severe on Rome Beauty, Missouri Pippin, Gravenstein, Duchess, Transparent, McIntosh, and Twenty Ounce, in 1933.

BLISTER CANKER (Nummularia discreta). Incidence of this canker was reported from Virginia, Arkansas, Missouri, and Kansas.

PERENNIAL CANKER (Gloeosporium perennans) Oregon, confined mostly to the Hood River Valley. According to LeRoy Childs, the parasite of the wooly aphis is now well established and appears to be assisting in the control of the wooly aphis which is associated with perennial canker infection, so that there has been no serious spread of the canker since the parasite was introduced in 1928. The fruit rot was reported from Washington.

XYLARIA ROOT ROT (Xylaria sp.) Virginia and Tennessee.

WOOD ROT (Pleurotus ulmarius). One report in Connecticut, on a living tree.

SPRAY INJURY was reported as of frequent occurrence in New York, New Jersey, Delaware, Virginia, Illinois, and Arkansas. In Illinois, it was much more prevalent than last year or than in an average year and was attributed in most instances to lime-sulphur (1-50). Spray injury was reported from several counties in New York and from 2 counties in New Jersey. In Washington, arsenical injury of fruit was reported from the Wenatchee and White Salmon districts, and sulphur sunscald from Yakima and Wenatchee.

PEAR

SCAB (*Venturia pyrina*). Several severe local infections were reported from Maine. It was observed in 5 counties in New York and in New Jersey, Maryland, Virginia, Ohio, Michigan, Wisconsin, Missouri, Kansas, Washington, and Oregon. Estimated losses were: Maryland, Ohio, Michigan, 5 per cent; Missouri, 2 per cent.

BLIGHT (*Bacillus amylovorus*) was reported from 17 States. In Massachusetts, Connecticut, Michigan, and Wisconsin, it was more prevalent than in 1932. It was less so in Virginia, Missouri, and Kansas, and much less so in Arkansas. Estimated percentage losses ran as follows: Massachusetts, 15; Virginia, 10; Maryland, 7; Missouri, 4; and Ohio, 0.5. In New York, the principal varieties noted in the order of severity of injury were Clapp Favorite, Bartlett, Bosc, Seckel, and Kieffer.

LEAF BLIGHT (*Fabraea maculata*). Reported from Delaware as much more prevalent than in 1932. Reported also prevalent in New Jersey, Maryland, Virginia, Tennessee, Louisiana, and Missouri.

RUST (*Gymnosporangium juniperi-virginianae*). New York.

MYCOSPHAERELLA LEAF SPOT (*Mycosphaerella sentina*). New York and Mississippi.

BLACK ROT (*Physalospora obtusa* [*Sphaeropsis malorum*]). New Jersey.

CROWN GALL (*Bacterium tumefaciens*). Washington.

BOTRYTIS ROT (*Botrytis cinerea*). Washington.

CERCOSPORA LEAF SPOT (*Cercospora minima*). Louisiana.

BROWN ROT CANKER (*Sclerotinia cinerea forma pruni*). Washington.

QUINCE

RUST (*Gymnosporangium germinale*). Massachusetts (trace to 5 per cent) and Michigan (trace).

BLIGHT (*Bacillus amylovorus*). Much more prevalent in Massachusetts than in 1932; also reported from Connecticut, New York, New Jersey. Estimated loss in Massachusetts, 20 per cent, with a maximum of 50, attributed largely to the fact that blighted branches were not removed in 1932.

LEAF SPOT (*Fabraea maculata*). Unusually prevalent in Delaware. Reported also from Louisiana, Tennessee, New York.

BLACK ROT (*Physalospora obtusa* [*Sphaeropsis malorum*]). Massachusetts.

CROWN GALL (*Bacterium tumefaciens*). New Jersey.

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PEACH

LEAF CURL (Exoascus deformans) was more prevalent than in 1932 in Connecticut, Maryland, Virginia, West Virginia, Mississippi, Arkansas, Michigan, Missouri, and Kansas and much more so in Delaware, Ohio, Illinois, Indiana, and California. In many of these States the attack of leaf curl was said to be more severe than for 10 or 15 years, and in Ohio and Illinois, it was reported as the worst ever experienced. Percentage losses were reported as follows: Ohio, 10; Illinois, 10; Indiana, 8; Missouri, 8; and Maryland, 2.5. Individual maximum losses of 90 per cent or more were recorded in West Virginia, Tennessee, and Missouri. Properly sprayed orchards were very generally free of curl. Many growers, because of unusual economic conditions, could not spray; hence the unusually wide and severe incidence of leaf curl.

BROWN ROT (Sclerotinia fructicola). This disease was widespread and more prevalent than last year in New Hampshire, New York, Massachusetts, Connecticut, and Kentucky and much more prevalent in Delaware, Maryland, and Indiana. It was less so in North Carolina, Georgia, Ohio, Michigan, and Kansas and much less so in Illinois. Average percentage losses ranged from 10 per cent in Massachusetts, 7 per cent in Maryland, 4 in Indiana, and 1.5 in Missouri, to a trace in Illinois and Michigan. There was considerable blossom blight in the West End of the peach belt in New York and heavy loss of fruit during the packing season.

BACTERIAL SPOT (Bacterium pruni). Incidence of this disease was recorded in Massachusetts, Connecticut, New Jersey, Delaware, Maryland, Virginia, North Carolina, Georgia, Arkansas, Ohio, Illinois, Missouri, Kansas, and Arizona. Average losses ranged from a trace to 2 per cent. Individual cases of as much as 15 per cent loss were reported from Missouri. In Massachusetts, Connecticut, and Delaware, the prevalence was greater than in 1932 and much premature leaf fall was recorded in many States.

SCAB (Cladosporium carpophilum) was more prevalent in Indiana and much more so in Delaware than it was in 1932 or than in an average year. In New Hampshire, Maryland, Mississippi, and Ohio, it was approximately the same as in 1932, while in Kentucky, Missouri, and Kansas it was less prevalent. In most instances, the damage recorded was of negligible importance. Average percentage losses of any significance were Maryland and Indiana, 2; Ohio, 1; and Missouri, 0.5.

CROWN GALL (Bacterium tumefaciens) was reported from Connecticut, Missouri (mostly confined to nursery stock), and North Carolina, where it was widely distributed in the sand-hill area. It was present in both low and high land but most severe in the former. Infected trees in many orchards died after the March freeze.

BLIGHT (Coryneum beijerinckii). Maryland, Michigan, Missouri. Average loss did not exceed a trace.

YELLOWS (Virus) was reported from New Hampshire, New Jersey, Pennsylvania, Maryland, Virginia, Kentucky, Tennessee, Missouri, and District of Columbia. In Pennsylvania, 428,756 trees in 13 counties were inspected. Approximately 0.14 per cent of these were found affected with yellows. Valleau of Kentucky reports that in a clean cultivated part of an orchard in Oldham County 18 "yellows" trees were removed. In another part of the same orchard, 300 yards away from those trees there was one affected tree, with weeds abundant and tall. The spread of yellows suggested to him that, if the insect vector is limited to peach trees, the disease will extend more rapidly than where woods or a cover crop is present.

POWDERY MILDEW (Podosphaera oxyacanthae). New Jersey and Utah.

DIE BACK (Valsa leucostoma). Tennessee, Michigan, and Missouri. Serious in neglected orchards, causing as much as 30 per cent loss in some Missouri orchards.

TWIG BLIGHT (Shaeropsis malorum). Texas.

RUST (Tranzschelia pruni-spinosae (T. punctata)). Missouri.

SHOT HOLE (Cercospora circumscissa). Mississipi.

ROOT KNOT (Heterodera marioni). North Carolina, Missouri, and Arizona. In North Carolina, according to Poole, young trees on infested soil died in large numbers. Other affected trees died following the spring freeze. Trees on badly infested soils showed lack of vigor toward the end of the growing season. Brown reported that root knot is a serious disease in Arizona. The stunted fruit from infected trees cannot compete in the market with imported fruit.

SPRAY INJURY. Reports of spray injury were received from Connecticut, New York, New Jersey, Delaware, Maryland, and Virginia. Cases of severe arsenical injury were observed in New York just prior to blooming, a most unusual circumstance. Frost injured the early blossom-bud leaves, and unseasonably hot weather prevailed during the delayed dormancy period. As a result, severe leaf injury resulted from lime-sulphur in the delayed dormant spray. No such injury followed use of wettable sulphur sprays. In Virginia, the general acceptance of zinc lime as an arsenical corrective apparently resulted in much less spray injury than was experienced when the combination was not applied.

WINTER INJURY was reported from Delaware, Virginia (Amherst County), Mississippi (Attala County), Arkansas, Michigan, Washington, and Oregon.

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PLUM AND PRUNE

BROWN ROT (Sclerotinia fructicola): This disease was reported present in varying degrees of severity in 12 States. In New Jersey, it caused marked damage in plantings of Green Gage plums, and, according to A. B. Groves, of Virginia, home plantings of plums in that State were, in many cases, a total loss. Average percentage losses, as reported, were Ohio and Michigan, each 10; Maryland, 7; and Missouri, 5. Individual maximum losses ran from 30 to 100 per cent. Sclerotinia cinerea forma pruni was reported from Washington.

CROWN GALL (Bacterium tumefaciens). Maryland, Minnesota.

BACTERIAL SPOT (Bacterium pruni). No appreciable damage was reported as having been caused by bacterial spot. Its incidence was recorded in Maine, Maryland, Virginia, Ohio, and Wisconsin.

PLUM POCKET (Exoascus communis)was more prevalent than in 1932 in Mississippi and much more prevalent in Wisconsin. Elsewhere (Tennessee, Michigan, Minnesota, and North Dakota), it was the same as last year. The average percentage losses were Wisconsin, 5; North Dakota, 2; and Missouri, 0.1. In Mississippi, it was observed in 16 counties.

BLACK KNOT (Plowrightia morbosa). Massachusetts, Connecticut, New Jersey, Maryland, Michigan, Wisconsin, Minnesota, Missouri, and North Dakota. Of little economic importance in commercial plantings.

SHOT HOLE (Coccomyces prunophorae). Slight to moderately severe in New York; of more than average destructiveness in Oregon. Incidence reported also from Minnesota and Kansas.

SCAB (Cladosporium carpophilum). Arkansas, Wisconsin.

BLIGHT (Bacillus amylovorus). Mississippi.

CHERRY

LEAF SPOT (Coccomyces hiemalis) was more prevalent in Michigan and Missouri than it was last year and much more so in Delaware. New York reported moderate to severe infection of both sour and sweet varieties. Very prevalent annually in Tennessee. In Arkansas, neglected orchards showed as much as 50 per cent defoliation. Properly sprayed orchards were healthy. Losses in Michigan, Wisconsin, and Missouri, severe. Exceeded average destructiveness in Oregon.

BROWN ROT (Sclerotinia fructicola). Delaware and Maryland reported brown rot much more prevalent than in 1932 and than in an average year. It was less prevalent in Michigan, Wisconsin, and Oregon and much less so in Kansas. In Maryland, where the disease was favored by heavy summer rains, the estimated average loss was 5 per cent. In Virginia, the sweet cherry was severely affected, in some instances amounting to a total loss. Sclerotinia cinerea forma pruni, Washington.

BACTERIAL SPOT (Bacterium pruni). New York, and Iowa.

CALIFORNIA BLIGHT (Coryneum beijerinckii). Washington.

WITCHES' BROOM (Excascus cerasi). Washington.

XYLARIA ROOT ROT (Xylaria sp.). Tennessee. On trees used to replace apple trees that had died of this disease.

ARMILLARIA ROOT ROT (Armillaria mellea). Michigan. Locally severe.

BLACK KNOT (Plowrightia morbosa) New Jersey. General but not serious.

BLIGHT (Bacillus amylovorus). New Jersey.

GRAPE

BLACK ROT (Guignardia bidwellii) was reported as of more or less importance in 19 States in 5 of which it was more prevalent than in 1932. In Delaware, it was much more so. In Georgia, Illinois, and Kansas, it was less prevalent. Average percentage losses were Massachusetts and Florida, 15; Maryland, 6; Ohio, 4; and Missouri, 1.5. Individual maximum losses ranged from 10 to 100 per cent.

DOWNY MILDEW (Plasmopara viticola). More prevalent than usual in New Jersey, Pennsylvania, Maryland, and Missouri. Less prevalent in Massachusetts, Florida, and Ohio and much less so in Illinois. Percentage losses on the whole, were small. Missouri, 2; Massachusetts, Pennsylvania, and Florida, 1 each; and Ohio, 0.5. The greatest maximum infection (55 per cent) was recorded in Missouri. In New Jersey, it was more serious than in many years. Could be found present on nearly every non-sprayed vine.

POWDERY MILDEW (Uncinula necator). Connecticut, New York, and Washington. Unimportant.

ANTHRACNOSE (Elsinoe ampelina /Sphaceloma ampelinum/). Maryland, Florida, Arkansas. Serious in Florida, causing average loss of 25 per cent. Maryland, a trace.

DEAD ARM (Cryptosporella viticola). New York and Michigan. Severe in yards where spraying has been neglected.

RIPE ROT (Glomerella cingulata). Maine, Massachusetts, Missouri.

CROWN GALL (Bacterium tumefaciens). Maryland (trace).

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VIBRISSEA ROOT ROT (*Vibrissea hypogaea*). Iowa. Observed for first time in State, in Polk County.

STRAWBERRY

LEAF SCORCH (*Diplocarpon earliana*). Reported prevalent in Connecticut, Florida, Mississippi, Louisiana, Arkansas, and Wisconsin. Unimportant in comparison with last year.

LEAF SPOT (*Mycosphaerella fragariae*) was reported as generally prevalent in Mississippi, Louisiana, Michigan, Wisconsin, Minnesota, and Missouri. It was reported as much more prevalent in Illinois. Losses, except in individual cases, were generally unimportant.

DWARF (*Aphelenchoides fragariae*). Prevalent in Massachusetts, Virginia, Florida, Louisiana, and Arkansas. In Virginia, the average loss was 5 per cent, with a maximum of 75 per cent in individual instances. In Louisiana, it was observed that affected plants recover almost completely during the winter. Yield is, therefore, only slightly impaired.

BLACK ROOT (Undetermined). Reported prevalent in 15 States throughout the Nation, caused average percentage losses from a mere trace to 50. The most widespread and damaging disease in Massachusetts. Reported from Arizona as one of the most serious strawberry maladies in that State. In Michigan, it was severe but damage was difficult to estimate. Maryland reported recurrence of black rot in increasing amounts during the past 2 or 3 years. It is now the most serious strawberry problem in that State. In the severest cases, as many as 50 per cent of plants are killed.

BOTRYTIS FRUIT ROT (*Botrytis cinerea*). Reported from Louisiana as much more prevalent than in 1932 or in an average year. Estimated loss, 6 per cent. Reported generally prevalent in Pennsylvania and of little importance in Massachusetts because of dry weather.

LEATHER ROT (*Phytophthora cactorum*) Mississippi, Louisiana.

SOFT ROT (*Rhizopus nigricans*). Kansas, Arizona. Unimportant.

ROOT KNOT (*Heterodera marioni*) was reported from Maine, Massachusetts, Arkansas, and Missouri. Caused little more than a trace of loss.

LEAF VARIEGATION (Undetermined). Reported from Maryland, Virginia, Louisiana, Oklahoma, Arkansas. Confined to Blakemore variety.

POWDERY MILDEW (*Sphaerotheca humuli*). Washington.

MOSAIC (Virus). Wisconsin. Observed only in Douglas and Bayfield Counties.

SCLEROTIUM DISEASE (*Sclerotium rolfsii*). Florida. Less widespread but more destructive in individual fields than in former years.

YELLOWS (Undetermined). Minnesota and Montana.

BLACKBERRY

ORANGE RUST (Gymnoconia peckiana) was reported from New Jersey, Tennessee, Arkansas, Ohio, Wisconsin, Missouri, and Kansas as of minor importance, except in Arkansas, where it is regarded as the most important disease of the blackberry.

ANTHRACNOSE (Elsinoe veneta) caused an average loss of 5 per cent in Massachusetts. Severe also in New Jersey.

CANE BLIGHT (Leptosphaeria coniothyrium). Louisiana.

CROWN GALL (Bacterium tumefaciens). Wisconsin.

DOUBLE BLOSSOM (Fusisporium rubi). West Virginia. Some plantings a total crop loss.

MOSAIC. New Jersey.

LEAF SPOT (Mycosphaerella rubi). Kansas and New Jersey.

GRAY MOLD (Botrytis cinerea). New Jersey.

RASPBERRY

ANTHRACNOSE (Elsinoe veneta) was more prevalent than in 1932 in New Jersey, Illinois, Michigan, and Wisconsin. In Arkansas, it is always present and important. Estimated percentage losses were as follows: Maryland and Illinois, 5 each; Missouri, 4; Kansas, 2; Massachusetts, 1. Wisconsin reported considerable damage in the case of red varieties, particularly when subjected to overhead irrigation.

LEAF SPOT (Mycosphaerella rubi) was reported from New Jersey, Kentucky, Illinois, and Oregon. In New Jersey, the varieties Latham, Chief, and Viking were the most susceptible. Slight infection in Miller and none in the variety Potomac. In Kentucky, the disease was very severe, causing marked defoliation in the fall of 1932, and a high percentage (25 to 95 per cent) mortality during the winter. The varieties Chief and Latham were highly susceptible to such injury.

SPUR BLIGHT (Mycosphaerella rubina). Spur blight caused a loss of 5 per cent in Massachusetts. It was reported also from New York, Kentucky, and Wisconsin.

LEPTOSPHAERIA CANE BLIGHT (Leptosphaeria coniothyrium). Reported from Massachusetts, Maryland, Virginia, Kentucky, Ohio, Missouri, and Kansas. Percentage losses ranged from 50 in Kentucky to 4 in Maryland, 3 in Massachusetts, and 1 in Ohio.

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CROWN GALL (Bacterium tumefaciens). Maryland, Mississippi, Ohio, Michigan, Minnesota, and Kansas. Very severe near Hopkins, Minnesota, an important raspberry district. Average loss in any State did not exceed 2 per cent.

ORANGE RUST (Gymnoconia peckiana). Much more prevalent than usual in Massachusetts, where losses in occasional plantings ran as high as 10 to 75 per cent. Reported also from Maryland, Arkansas, Michigan, Minnesota, and Wisconsin.

LEAF CURL (Virus). Maryland, Ohio, and Wisconsin.

MOSAIC (Virus). Reported more or less generally prevalent in 13 States. Estimated damage in Massachusetts, 20 per cent; Ohio, 8; North Dakota, 1. In most States, of little economic importance.

STREAK (Virus), according to H. C. Young, caused a 4 per cent loss to growers in Ohio.

WILT (Verticillium sp.). Massachusetts and Michigan, trace.

POWDERY MILDEW (Sphaerotheca humuli) was reported as of scattered occurrence in New York and Minnesota. Not important.

LATE RUST (Pucciniastrum americanum). Massachusetts. Illinois and Indiana.

ORANGE RUST (Gymnoconia peckiana). Virginia.

WESTERN RUST (Phragmidium rubi-idaei /P. imitans/). Washington, Oregon. Important.

WINTER INJURY. Kentucky, Ohio, Minnesota, Arkansas, and Washington.

CRANBERRY

FALSE BLOSSOM (Virus). Massachusetts, Wisconsin. Moderately important. Appeared early in Wisconsin.

BITTER ROT (Glomerella cingulata vaccinii). Massachusetts. Apparently was present in all bogs; locally, very destructive, causing 50 to 75 per cent loss in individual bogs.

ROSE BLOOM (Exobasidium vaccinii). Massachusetts. Locally prevalent.

BLUEBERRY

STEM BLIGHT (Alternaria sp.?). Massachusetts. Was prevalent in all plantings but only locally serious. Caused serious damage in a few instances.

CROWN GALL (Bacterium tumefaciens). Massachusetts. Prevalent locally; becoming important in a few plantings.

WITCHES' BROOM (Pucciniastrum goeppertianum). New Hampshire.

LEAF SPOT (DIEBACK) (Fungus origin). Ohio. Important.

GOOSEBERRY

RUST (Puccinia caricis). New York, Wisconsin. Unimportant.

ANTHRACNOSE (Pseudopeziza ribis). New Jersey, Wisconsin.

POWDERY MILDEW (Sphaerotheca mors-uvae). Wisconsin, Washington.

LEAF SPOT (Mycosphaerella grossulariae). Wisconsin, Kansas.

CURRANT

RUST (Puccinia caricis). Connecticut.

ANTHRACNOSE (Pseudopeziza ribis). New Jersey. Local and severe.

ROOT ROT (Fomes ribis). Michigan.

CITRUS

STEM-END ROT, MELANOSE (Diaporthe citri /Phomopsis citri, P. californica/) was important in Florida, as usual. Abundant spring rains favored earlier fruit infection than usually occurs, and leaf infection was severe and common throughout the summer. Nevertheless, Florida citrus fruits were of better quality, size, and maturity than in the preceding year, according to Kuntz. Reductions in yield were estimated at 4 per cent for grapefruit, 3 per cent for sweet oranges, and 2 per cent for tangerines, while the losses from fruit rot were 4, 3, and 2 per cent, respectively. The disease was reported on Satsuma orange in Mississippi. Melanose and stem-end-rot are not important commercially in California, but lemon trees there are subject to decorticosis or shell-bark caused by this organism (at first called Phomopsis californica, now considered to be the same as P. citri). Other citrus trees are resistant to or immune from this form of attack.

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CANKER (Bacterium citri) was reported from a 15-mile area in Harris, Brazoria, and Galveston Counties, Texas, where these counties join. Scattered, abandoned thickets of Citrus trifoliata serve as infection loci in that area.

SCAB (Sphaceloma fawcettii) occurred on lime, grapefruit, King orange, and lemon in Florida. On grapefruit, which is the most important host, the loss was 5 per cent. Both foliage and young fruit of grapefruit were affected, but only fruit of the other hosts. Also reported from southern Louisiana on orange and from Mississippi on Satsuma.

BLAST AND BLACKPIT (Bacterium syringae /B. citriputeale/). Very little black pit, which affects lemons especially, was noted in California, due to the lack of hail accompanying rains. The usual amount of blast occurred.

ANTHRACNOSE ROT AND WITHERTIP (Colletotrichum gloeosporioides). California.

BROWN ROT, BROWN ROT GUMMOSIS (Phytophthora spp.) are diseases of major importance in California. Brown rot of the fruit due to Phytophthora citrophthora, P. parasitica, and P. hibernalis was of the usual prevalence in 1933. There was an increased amount of gummosis caused by P. citrophthora and P. parasitica. Sour orange is very resistant to this gummosis, grapefruit, sweet orange, and tangerine are susceptible, and lemon very susceptible. Gummosis and fruit rot due to P. citrophthora were reported from the western part of Puerto Rico but were not important there.

GUMMOSIS (Botrytis cinerea) occurs near the coast of California on lemons but is usually of slight importance. In 1933 there was less than usual.

STEM-END ROT, GUMMOSIS (Diplodia natalensis = Physalospora rhodina). Considerable stem-end rot occurred in Florida groves in the fall, especially in the storm areas. Diplodia gummosis was much less prevalent than usual in California. Orange is resistant to this gummosis, lemon and grapefruit are susceptible.

ROOT ROT (Armillaria mellea) occurs locally in California. Probably all the common root stocks are susceptible.

FRUIT ROTS AND INJURIES. According to H. E. Stevens, considerable stem-end rot due largely to Diplodia, Phomopsis, and Penicillium developed in Florida groves in the fall, especially in the storm areas. Most of this was due largely to previous injury or scratches on the fruit occasioned by the storms. Outside of this area there was no decided increase in fruit loss from stem-end rot.

Fruit rots and injuries reported from California by H. S. Fawcett include: Alternaria rot of lemons and black rot of oranges (Alternaria citri), the former less prevalent than usual, the latter of average abundance. Rot caused by Fusarium spp., of slight importance. Sour rot

(Oospora citri-aurantii), less prevalent than usual due to a season below average in temperature. Green mold and blue contact mold (Penicillium digitatum and P. italicum) were both very important, as usual. Stylar-end rot of Persian limes (undet.) Endoxerosis or internal decline of lemons (? water relations) was less abundant than usual due to cooler summer. Juice sac granulation of Valencia oranges appears to be associated with vigorous growth and was more prevalent than usual. Oleocellosis (oil liberated from rind) less abundant than usual, affects all citrus but especially lemons. Red blotch, possibly due to respiration products, a storage problem especially of lemons. Peteca, also on lemons, mostly in storage. Water spot and rot (water absorbed by rind) occurs mostly in the eastern end of Los Angeles County and affects Navel oranges especially but other kinds if conditions favor it. In 1933, the weather at first was favorable but later became drier, and development of this trouble was checked.

LEAF SPOTS. (Phyllosticta sp.) was reported on lemon from New Jersey. Septoria citri is of slight importance in Riverside and San Bernardino Counties, California. There was less than usual in 1933 and much less than in the preceding year, due to the dry summer. Grapefruit and lemon are susceptible, orange is resistant.

TWIG BLIGHT (Sclerotinia sclerotiorum). California, especially on lemons. Less than usual.

PSOROSIS (probably virus) is a very important disease in California. In 1933 it was more prevalent than usual.

CHLOROSIS, EXANTHEMA, MOTTLE LEAF (malnutrition) were reported from California. Mottle leaf is most important.

AVOCADO

ANTHRACNOSE (Colletotrichum gloeosporioides). In southern Florida and Puerto Rico.

SCAB (Sphaceloma perseae) was very severe in several parts of Florida causing a high percentage of inferior fruit where no control was attempted. Also in Puerto Rico.

FRUIT AND LEAF SPOT (Cercospora sp.) appeared to be more severe in Florida especially on foliage, than previously. In some cases 90 per cent of the fruit was made unsalable through surface spots. This condition applied more to individual trees or to certain groves where no efforts were made to control the disease. (H. E. Stevens).

POWDERY MILDEW (Oidium sp.). Southern Florida.

ALGAL LEAF SPOT (Cephaleuros virescens). Florida.

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BANANA

PANAMA DISEASE (Fusarium cubense). Always present but not abundant in Puerto Rico.

STEM AND LEAF ROT (Sclerotium rolfsii) also reported from Puerto Rico (Insular Experiment Station).

FIG

RUST (Physopella fici). Georgia. All figs near Athens were infected but incidence too late to do much damage. Reported also from Alabama and Florida.

TWIG BLIGHT (Stilbum cinnabarinum). Reported from Louisiana. First appeared there in 1932, apparently confined to very moist, shady places.

THREAD BLIGHT (Corticium koleroga) is very destructive in southwestern Louisiana.

CANKER (Tubercularia fici). Louisiana.

ROOT KNOT (Heterodera marioni) is a serious trouble in Arizona and is becoming more estensively distributed through sale of diseased nursery stock.

PERSIAN WALNUT

BACTERIAL BLIGHT (Bacterium juglandis). Much more prevalent in Oregon and Delaware than in the past several years. Reported also from Washington and Mississippi. The loss in Oregon was estimated by P. W. Miller to be 35 per cent.

BLOTCH (Marssonia juglandis). New York, where it caused some "die back"; and Washington, where it was observed on nuts, leaves, and stems of seedling Persians, causing dieback and defoliation; Mississippi.

LEAF SPOT. Downy spot (Microstroma juglandis var. brachysporum) and leaf spot (Ascochyta juglandis) were reported from Oregon, for the first time.

WOUND PARASITES. Pleurotus pulmonarius var. juglandis and Schizophyllum commune, both reported from Oregon.

PECAN

SCAB (Cladosporium effusum). Reported from North Carolina as of some importance. Seedling varieties most susceptible. It is annually important in Georgia. Reported also from Florida, Mississippi, Louisiana, and Texas.

POWDERY MILDEW (Microsphaera alni). Mississippi. Generally distributed and more prevalent than in 1932 and in an average year.

LEAF SPOTS. Cercospora fusca (brown leaf spot) on a few trees in the coastal area of North Carolina. Articularia sp., Texas (P. D. R. 17: 172). Pestalozzia sp., Mississippi.

CROWN GALL (Bacterium tumefaciens). Texas, Arizona.

ROOT ROT (Phymatotrichum omnivorum). In Arizona, according to J. G. Brown, the use of ammonium sulfate and ammonium hydrate resulted in good control of this root rot. Trees that had lost most of their leaves were restored to an apparently healthy condition. The method has been given over two years' trial now. The disease was also reported from Texas.

ROSETTE (Nonparasitic). Mississippi. Scatteringly prevalent.

DISEASES OF VEGETABLE CROPS

POTATO

LATE BLIGHT (Phytophthora infestans) was reported prevalent in 12 States. It was more prevalent than in 1932 and than in an average year, in New Hampshire and Connecticut, and much more so in Florida, where there was an average loss of approximately 15 per cent and individual cases of total loss. In Hidalgo and Cameron Counties, Texas, it caused a loss of 1 per cent. Elsewhere, throughout the country, it was generally less prevalent than average and often too late to cause appreciable crop loss.

EARLY BLIGHT (Alternaria solani). Early blight was generally distributed throughout New Hampshire, Florida, and Ohio; scatteringly so in Massachusetts, Virginia, Louisiana, and North Dakota; and locally in West Virginia, Tennessee, and Wisconsin. It was, in most of the 16 States that reported its occurrence, less prevalent than usual, though in Michigan it was more prevalent. Estimated percentage losses were as follows: Massachusetts, 3; Ohio, 2; Texas, 1; Maryland and Michigan, 0.5; elsewhere, a trace or less.

SCAB (Actinomyces scabies). Distribution of scab was general in Delaware, Maryland, Florida, Mississippi, Ohio, Michigan, Wisconsin, and Missouri. It was prevalent to about the same degree as usual, though more so than last year in Minnesota and much more prevalent there than in an average year. Percentage losses were estimated at 5 in Texas; 4 in

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Minnesota; 3 in Maryland; 2 in Michigan and Kansas; 1 in Iowa, Missouri, and Oregon; 0.5 in Florida and Ohio; and a trace or less in Massachusetts and North Dakota. Maximum individual losses of 100 per cent were recorded in Oregon, 55 in Michigan, and 32 in Missouri.

BLACK LEG (Bacillus phytophthorus) was generally neither more nor less prevalent than usual. It was reported from 15 States in 3 of which its distribution was general, in 5 it was scattered, and of local occurrence in one. Percentage estimates of loss were as follows: Massachusetts, 12; Michigan, 2; North Dakota, 1; Maryland, Florida, Missouri, and Oregon, 0.5; Ohio, 0.4; Texas, Wisconsin, and Kansas, a trace. Individual losses of 20 and 10 per cent were reported from Florida and Oregon, respectively.

POTATO WILT (Fusarium oxysporum). Wilt was reported from Maryland, Minnesota, Missouri, and North Dakota as having been more prevalent than in an average year. In the remaining States reporting incidence of wilt, the prevalence was approximately the same as in an average year. Estimated percentage losses were: Maryland, 5; Missouri, 2.6; Ohio, 2; Michigan, 1; North Dakota, 0.6; Texas, 0.5.

STEM ROT (Corticium vagum). Distribution general in Massachusetts, Delaware, Maryland, Florida, Ohio, Michigan, Wisconsin, Missouri, and North Dakota. It was more prevalent than in 1932 in Florida, Michigan, and Minnesota, and much more so in Delaware. Elsewhere, its prevalence was approximately the same as in 1932. Estimated percentage losses were as follows: Massachusetts, 9; Kansas, 6; Maryland, 5; Florida, 4; Minnesota, 3; Ohio, 2; Missouri, 1.5; Texas, 1; and Virginia, trace.

BACTERIAL WILT (Bacterium solanacearum) was reported from the piedmont and coastal-plain counties of North Carolina and from Florida and Arizona.

POWDERY SCAB (Spongospora subterranea). Reported only from Mississippi.

VERTICILLIUM WILT (Verticillium albo-atrum). New Jersey and Indiana.

SILVER SCURF (Spondylocladium atrovirens). New Jersey, slight importance.

NEMATODE (Anguillulina pratensis). Recovered from potatoes received from Orangeburg, South Carolina.

DRY ROT (Fusarium sp.). New Jersey and Washington.

STEM-END ROT (Fusarium eumartii). Michigan.

VIOLET ROOT ROT (Rhizoctonia crocorum). Oregon.

STEM AND TUBER ROT (Sclerotium rolfsii). Arkansas, Mississippi, Florida, Texas. It caused a loss of 1 per cent in Texas, 0.5 per cent in Florida.

STEM ROT (Sclerotinia sclerotiorum). Washington.

MOSAIC (Virus). Several States reporting incidence of mosaic were not specific as to kind. Two (Florida and Oregon) recorded the prevalence of both mild and rugose mosaic; Wisconsin reported crinkle and rugose mosaic; and Arkansas and Washington reported mild mosaic only. Percentage losses, in general, were estimated as follows; Oregon (mild mosaic), 10; Minnesota (mosaic and related diseases), 3; Maryland ("mosaic"), 2.5; Oregon (rugose mosaic), 2; and Florida, Missouri, and North Dakota ("mosaic"), 1. Maximum losses in individual instances ran from 5 to 70 per cent.

MISCELLANEOUS VIRUSES. Giant Hill, Pennsylvania. Spindle tuber was reported from Maryland, Minnesota, Michigan, Missouri, and Kansas. Yellow Dwarf was recorded for Michigan, Ohio, and Pennsylvania. Leaf roll was reported as generally prevalent in Delaware, Ohio, and North Dakota. A loss of 1.5 per cent was estimated in Oregon. It was reported also from New York, Maryland, Pennsylvania, Michigan, Wisconsin, and Washington.

TIPBURN AND HOPPER BURN (Drought and leaf hopper) were recorded in Connecticut, New York, New Jersey, Maryland, Arkansas, Ohio, Michigan, Wisconsin, Minnesota, and North Dakota. Estimated percentage losses were Minnesota, 10; Michigan, 5; Maryland, 3; and North Dakota, 0.2.

TOMATO

LEAF SPOT (Septoria lycopersici) was more prevalent than in 1932 in New Jersey, Indiana, and Michigan and was much more so in Delaware. In Maryland and Kansas, it was less prevalent and, in Ohio, Wisconsin, and Minnesota, it was approximately as common as it was last year. Only 7 out of 12 States reported significant losses. These ranged from 5 per cent in Texas, and 2.5 per cent in Wisconsin to a trace in Indiana and Kansas.

WILT (Fusarium lycopersici). Wilt was reported from 14 States. In Maryland, the loss was estimated at 0.2 per cent, a fact attributed to the wide use of Marglobe and other wilt-resistant varieties that have markedly reduced the annual losses from this disease. In North Carolina, wilt was "severe" and damaged even the resistant varieties. Estimated percentage losses were as follows: Virginia, Texas, and Missouri, 5; Michigan, 3; Ohio, 2; Indiana and Iowa, 0.1. Maximum individual losses of 80, 75, 49, and 20 per cent were recorded in Indiana, Missouri, Virginia, and Maryland, respectively

FRUIT ROT (Phytophthora infestans). This disease was more prevalent in Massachusetts, Connecticut, and Maryland, than it was a year ago and much more so than in an average year in New Hampshire, Massachusetts, and Connecticut. It was generally distributed in Massachusetts and Maryland and caused an estimated loss of 35 per cent in the former State and individual losses of 100 per cent. It was also reported from Texas.

BACTERIAL WILT (Bacterium solanacearum) was reported present in Maryland, North Carolina, Mississippi, Texas, Indiana, Missouri, and the Virgin

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Islands. Nowhere was it of much economic importance, though in Maryland it caused a maximum individual loss of 80 per cent.

LEAF MOLD (Cladosporium fulvum) was largely confined to the greenhouse crop in those States whence it was reported. Its prevalence was recorded in Connecticut, New York, Texas, Ohio, Wisconsin, and Missouri.

EARLY BLIGHT (Alternaria solani) was generally pronounced and often severe in Massachusetts on the early crop, causing an average loss of 50 per cent for the entire State It caused a loss estimated at 5 per cent in Texas. It was reported prevalent also in New Hampshire, Connecticut, New York, Maryland, Tennessee, North Carolina, Louisiana, Arkansas, Wisconsin, and Missouri, where, with the exception of Maryland, it was of little importance.

BACTERIAL CANKER (Aplanobacter michiganense). This disease appeared in southern California, for the first time, in 1933. In the northern counties it has been destructively prevalent for several years. It was reported as having done considerable damage in Massachusetts, Indiana, and Maryland. Other States reporting its occurrence were Connecticut, New Jersey, North Carolina, Mississippi, Texas, Arkansas, Ohio, Wisconsin, Kansas, and Utah. In Arkansas, a single field of the variety Marglobe suffered more than a 50 per cent loss.

BACTERIAL FRUIT SPOT (Bacterium vesicatorium) caused 5 per cent loss in Texas.

MOSAIC (Virus) was more prevalent in Connecticut and Louisiana than in 1932. Elsewhere, it was neither more nor less common than in other years. The yellow type of mosaic was most prevalent in New Jersey and was always accompanied by tip necrosis and fruit mottling. Other States reporting incidence of mosaic were Massachusetts, Maryland, North Carolina, Texas, Wisconsin, Missouri, and Kansas.

BLOSSOM-END ROT (Nonparasitic) caused 3 per cent loss in Texas and was reported as abundant throughout North Carolina, Missouri, Minnesota, and North Dakota. Elsewhere, it caused little more than a trace of loss.

CURLY TOP (Virus). Less than usual in Washington, about the usual amount in Oregon.

STREAK (Combination of viruses). Ohio in greenhouses, Wisconsin, Missouri, Washington, California. Very important in California.

SWEET POTATO

BLACK ROT (Ceratostomella fimbriata) caused 15 per cent loss in Texas. It was of greater than average prevalence in Maryland, where it caused a loss of 3 per cent. It was less prevalent in Iowa, Missouri, and Kansas, but caused losses of 3, 1.5, and 3 per cent, respectively. In the remaining 8 States in which its incidence was recorded the prevalence was approximately the same.

WILT, STEM ROT (Fusarium batatatis and F. hyperoxysporum). Several State reported an increased amount including Maryland, Indiana, Iowa, and Missouri, and in North Carolina the disease was severe. In Maryland, losses have grown with the increased planting of Little Stem varieties. In Indiana, imported seed of the Priestly strain has been heavily infected, according to J. A. McClintock, who states also that wind-blown sand evidently spreads soil infection. Delaware reported the usual amount and Virginia less. In Virginia the disease occurs mostly on the Eastern Shore. Losses estimated: Virginia, 10 per cent; Missouri and Kansas, each 5 per cent; Maryland, 2.5 per cent; and Texas, 2 per cent. Arkansas reported the disease "rather prevalent."

SCURF (Monilochaetes infuscans) was reported from New Jersey, Delaware, Maryland, Virginia, North Carolina, Texas, Indiana, Missouri, and Kansas. The use of good seed and treatment of the plants with sulfur markedly reduced scurf in North Carolina. In New Jersey excellent control was obtained by dipping the sprouts in one of the mercuric compounds.

SOIL ROT (Actinomyces sp.) Reported from Delaware, Virginia, Maryland, Texas, Indiana, and Kansas. Unimportant, except in Kansas and Maryland, where it caused average losses of 1 and 5 per cent, respectively.

STORAGE ROTS (Several organisms, including Rhizopus nigricans) were reported as causing losses ranging from a trace to 10 per cent in certain States, notably Maryland, Texas, and Missouri.

CHARCOAL ROT (Rhizoctonia bataticola). Unimportant; reported from Maryland, Mississippi, and Texas.

SURFACE ROT (Fusarium oxysporum). Delaware, North Carolina, Mississippi.

LEAF SPOT (Phyllosticta batatas). Missouri, apparently first report from State; Virginia.

VIOLET ROOT ROT (Rhizoctonia crocorum), Texas.

ROOT KNOT (Heterodera marioni). Reported from Mississippi and Arkansas. In the latter State, it was present in beds, often so serious as to call for declaration of quarantine.

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BEAN

BACTERIAL BLIGHT (*Bacterium phaseoli*) was less prevalent than it was last year in Maryland, Iowa, and Kansas, and much less so in Virginia, where it was confined to the spring crop. In the remaining 7 States reporting incidence of bacterial blight, there was neither more nor less than usual. A bacterial blight, probably this, was found in the Tucson district of Arizona, where it had not been known previously. Average percentage losses, so far as reported, were as follows: Florida, 8; Massachusetts, Texas, Michigan, Iowa, 5; Maryland, 2; Virginia, North Dakota, trace.

HALO BLIGHT (*Bacterium medicaginis phaseolicola*), reported from Massachusetts, Louisiana.

BACTERIAL WILT (*Bacterium flaccumfaciens*), New York; West Virginia, apparently first report for State.

ANTHRACNOSE (*Colletotrichum lindemuthianum*). This disease was reported from 15 States but with the possible exception of Maryland, Florida, Ohio, and Missouri, it was of little importance. In Florida it caused an estimated loss of 11 per cent, in Missouri 1.5 per cent, 0.5 in Maryland, and a trace in South Carolina. In Delaware, it was much more prevalent than in former years but no figures indicating loss were submitted. The general use of western-grown seed in Maryland's canning acreage has nearly eliminated loss from this disease.

RUST (*Uromyces phaseoli* [*U. appendiculatus*]) was unusually severe, especially on Kentucky Wonder, in Arkansas. It also was reported from Maine, Massachusetts, Connecticut, Mississippi, Texas, Wisconsin, California, and Puerto Rico.

MOSAIC (Virus) was reported from Massachusetts, Maryland, Virginia, Texas, Arkansas, Michigan, Wisconsin, North Dakota, Kansas, Colorado, Idaho, and Puerto Rico. It was moderately severe in North Dakota, where it caused an average loss of 2 per cent and in Virginia, where the loss ranged from 1 to 50 per cent. In Puerto Rico it was severe on Lima and "bunch" beans.

LIMA BEAN

POD BLIGHT (*Diaporthe phaseolorum*) was prevalent in Maryland, Delaware, and New Jersey. Unimportant.

ANTHRACNOSE (*Colletotrichum lindemuthianum*). Locally prevalent in Ohio, where it caused damage amounting to 3 per cent. Reported also from Puerto Rico.

DOWNY MILDEW (*Phytophthora phaseoli*). Ohio and New Jersey. Unimportant.

ONION

DOWNY MILDEW (Peronospora schleideni). Downy mildew was prevalent in Massachusetts, Connecticut, and New Jersey. Unimportant.

SMUT (Urocystis cepulae) caused a loss of 8 per cent in Massachusetts. New York reported smut prevalent in many fields that had been planted to onions year after year. Maximum infections of 100 per cent were recorded in some fields. But one other State (Ohio) reported incidence of smut; loss, 5 per cent.

SMUDGE (Colletotrichum circinans). This disease was reported from Delaware, New Jersey, New York, and Missouri. It was much more prevalent than usual in Delaware and caused an estimated loss of 3 per cent in Missouri.

PINK ROOT (Fusarium malli). Prevalent in Massachusetts, Connecticut, New York, North Carolina, Missouri, North Dakota, and Colorado. According to the reports received, it caused negligible loss except in Colorado, where there were individual instances of 100 per cent infection, and in Massachusetts where there was a reduction in yield amounting to 20 per cent.

NECK ROT (Botrytis allii) caused a loss of 0.5 to 1 per cent in New York. Reported also from Wisconsin. Unimportant.

CABBAGE AND CAULIFLOWER

YELLOWS (Fusarium conglutinans). The 1933 prevalence of yellows was greater than that of an average year in Ohio, Michigan, and Wisconsin and was much greater in Minnesota. In North Carolina, it is becoming increasingly important on sandy soils. In Maryland, where the average loss was 7 per cent, the disease is becoming less and less important because of increased adoption of yellows-resistant varieties. Other loss estimates reported were: Minnesota, 5 per cent; Missouri, 2.5; and Ohio, 2.

BLACK ROT (Bacterium campestre) was reported from 13 States and from Puerto Rico. It was more prevalent than in 1932 in Virginia, Mississippi, Louisiana, and Wisconsin. Elsewhere, its prevalence was neither more nor less than last year. Its distribution was general in Virginia, Mississippi, and Missouri. In most of the States reporting, no note was made as to distribution. The losses recorded in Virginia averaged 25 per cent. Other States reporting losses were: Massachusetts, 8; Missouri, 2; and Maryland, 0.5 per cent.

CLUB ROOT (Plasmodiophora brassicae) was observed on cauliflower in Maine, Massachusetts, Connecticut, New Jersey, New York, Maryland, and Michigan. In Massachusetts, wherever cauliflower has long been grown, club root is its most serious malady. In such areas, losses of 50 per

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cent or more are reported to be not unusual, even on relatively high, sandy soil.

DOWNY MILDEW (Peronospora brassicae). This disease was reported from Connecticut, Maryland, Virginia, North Carolina. In Virginia, it caused a loss of 10 per cent; elsewhere, it was unimportant.

TURNIP AND RUTABAGA

LEAF SPOTS. Colletotrichum higginsianum was reported from Mississippi. Cylindrosporium brassicae was prevalent in Massachusetts, especially in the Cape Cod area, where there was considerably more damage than in an average season; and from Mississippi. Alternaria brassicae was reported from Massachusetts and A. herculea from New York. In Massachusetts, Cercosporella albo-maculans caused severe damage to some plantings in the Connecticut Valley and on Cape Cod.

BACTERIAL LEAF SPOT (Bacterium sp.) was reported from North Carolina, where, during the fall, it caused a heavy mortality in young plants with total loss in some fields.

YELLOWS (virus), more prevalent than usual in Wisconsin.

CUCUMBER

WILT (Bacillus tracheiphilus). Wilt was reported from Maine, Massachusetts, New Jersey, Maryland, Ohio, Michigan, Wisconsin, Iowa, Minnesota, Missouri, Arkansas, and Louisiana. It was particularly severe in Massachusetts and Michigan, where it caused a crop loss of 20 per cent. In Ohio and Iowa, there was a 5 per cent loss.

DOWNY MILDEW (Pseudoperonospora cubensis) was reported from 7 States and from Puerto Rico. It was severe in Maryland, Virginia, and Florida, where it produced losses of 1, 5, and 9 per cent, respectively. In nearly all instances, it developed too tardily to cause much damage. In Puerto Rico, it was the most important disease of the cucumber.

POWDERY MILDEW (Erysiphe cichoracearum). Reported only from Massachusetts, Ohio, and Puerto Rico. Particularly severe in greenhouses.

ANTHRACNOSE (Colletotrichum lagenarium). Massachusetts reported some injury to late-planted crops. Reported also from New Hampshire, Connecticut, Maryland, Florida, Ohio, and Wisconsin. In Maryland, the loss was estimated at 1 per cent, while in Ohio it was 2 per cent.

ANGULAR LEAF SPOT (Bacterium lachrymans). Florida, Arkansas, Wisconsin, and Missouri. Unimportant, except in Florida, where it caused a 4 per cent loss.

MOSAIC (Virus) Incidence of cucumber mosaic was reported from Massachusetts, Connecticut, New Jersey, Maryland, Ohio, Michigan, Minnesota, Wisconsin, Iowa, Missouri, Kansas, and Puerto Rico. It was unusually damaging in all parts of Massachusetts to both early and late field plantings. Some commercial greenhouses in Milwaukee, Wisconsin, were so badly infested as to result in total loss. In Michigan, there was an average loss of 8 per cent. Other States registering a loss were: Massachusetts, 0.1; Iowa, 5; Maryland, 3; Ohio, 2; and Missouri, a trace.

CANTALOUPE

BACTERIAL WILT (Bacillus tracheiphilus) was reported from Maryland, Ohio, Michigan, Missouri, and Kansas. It was more prevalent in Maryland and Michigan than in 1932 or in an average year. Estimated percentage loses were: Michigan, 10; Maryland, 1.5; and Missouri, a trace.

ANTHRACNOSE (Colletotrichum lagenarium). Reported as more prevalent than last year in Massachusetts and Delaware, less prevalent in Wisconsin and Iowa, much less prevalent in Kansas. Other States reporting incidence of anthracnose were Connecticut, New Jersey, and Arkansas. Estimated percentage losses were: Iowa, 4; Wisconsin, 3; and Massachusetts and Maryland, each 0.5.

LEAF BLIGHT (Macrosporium cucumerinum). From Massachusetts, it was reported that leaf blight caused more damage to field-grown cantaloupes in August and September than all other diseases combined. Other States reporting leaf-blight incidence were Delaware, Maryland, Ohio, Wisconsin, and Missouri. Loss in Maryland was estimated at 5 per cent and in Ohio, 2 per cent.

DOWNY MILDEW (Pseudoperonospora cubensis) was prevalent in Massachusetts Delaware, Maryland, Wisconsin, Iowa, and Missouri. The percentage-loss estimates from those States reporting any were as follows: Maryland, 3; Iowa, 2; Missouri, trace.

MOSAIC (Virus). Maryland, Michigan, Wisconsin, Kansas. Losses ranged from a trace in Wisconsin to 1 per cent in Maryland and 5 in Michigan.

SQUASH

WILT (Mycosphaerella citrullina) was reported from Massachusetts as the cause of black rot of squash in storage. It was abundant on the vines in October. Severest infection was observed in fields devoted to squash the preceding year. It was also reported from New York.

POWDERY MILDEW (Erysiphe cichoracearum) was severe in several fields in New Jersey.

BACTERIAL WILT (Bacillus tracheiphilus) caused from 1 to 65 per cent loss in many gardens in Maine. Present also in Connecticut, Massachusetts,

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New York, and New Jersey. In Massachusetts, the loss was estimated at 10 per cent with some fields showing as much as a 40 per cent loss. The loss in New York was 1 to 3 per cent.

FRUIT ROT (*Sclerotinia sclerotiorum*). Montana.

WATERMELON

ANTHRACNOSE (*Colletotrichum lagenarium*) was recorded as prevalent in Massachusetts, Connecticut, Delaware, Maryland, Florida, Arkansas, Ohio, Missouri, Iowa, and Kansas. It was much more prevalent in Massachusetts and Florida and caused in those States a crop loss of 25 per cent; and in Iowa, 10 per cent. It was severe also in Maryland, where there was an estimated loss of 8 per cent, and in Ohio, with a loss of 2 per cent.

WILT (*Fusarium niveum*). New Jersey, North Carolina, Florida, Mississippi, Arkansas, Kansas, Iowa, Missouri, and Arizona. In Iowa, the estimated reduction in yield amounted to 20 per cent, and in Missouri, 8 per cent. Elsewhere, it was relatively unimportant.

CELERY

EARLY BLIGHT (*Cercospora apii*) was more prevalent than in 1932 in Massachusetts, Florida, and Wisconsin and was much more so in New York and Michigan than in an average season. In Massachusetts, both summer and winter varieties suffered more damage than usual, and the crop loss was estimated at 20 per cent. According to A. G. Newhall of New York, early blight attacked 100 per cent of certain early transplanted varieties on Staten Island. In Michigan, the disease was very severe in 1932. Blight was most severe in fields devoted to plants coming from beds where the disease was allowed to spread in the greenhouse. In some fields of summer celery, the loss was complete. The average loss for the State was estimated at 20 to 30 per cent. In Florida, the loss amounted to 14 per cent, in New York it was 5 to 10 per cent.

LATE BLIGHT (*Septoria* spp.) was less prevalent than usual in Connecticut, Wisconsin, Minnesota, and Colorado. In the latter State the loss in yield was estimated at 2 per cent. The estimated percentage loss in Ohio was 4 and in Michigan, 5. Elsewhere (Minnesota, Missouri, North Dakota) the loss did not exceed a trace.

YELLOWS (*Fusarium* sp.). Incidence of yellows was reported from New York, Ohio, Michigan, Minnesota, and Colorado. Losses were estimated at 10 per cent in Colorado; 5 to 8 in Michigan; 5 in Minnesota; 2 in Ohio, 0.5 to 1 in New York. This disease occurs in many of the muck areas of Michigan and may become serious if the soil becomes moderately dry and the temperature exceeds 80°F. Both New York and Minnesota reported that the disease has been spreading and increasing in amount during the past three hot dry years. In Michigan and New York, all yellow varieties, except Michigan Golden, were reported susceptible. A 48 per cent increase in yield was demonstrated on muck soil in Wayne County, New York, from the use of Michigan Golden. This variety also proved resistant in Colorado.

YELLOWS (Virus) was not reported in 1933.

MOSAIC (Virus), local in New York, reported from Florida.

ROTS. Watery soft rot, pink rot (Sclerotinia sclerotiorum) New York, on celery in common storage or pits, loss 0.5 to 2 per cent. Michigan, serious on trenched celery and occasional on blanching celery. Bacterial soft rot (Bacillus carotovorus) New York, loss 1 to 3 per cent, under same conditions as Sclerotinia. Gray mold rot (Botrytis cinerea) New York, not very common.

BLACK HEART (Undet.) was reported from New York, Michigan, and Wisconsin. L. C. Cochran in Michigan stated that the disease seemed to be associated with high temperature and excessive vegetative growth. Excessive use of nitrates seems to favor the disease.

ROOT KNOT (Heterodera marioni) was severe in some fields in the Kalamazoo and Decatur sections of Michigan. Most of the damage was on drier soils. Caused 1 per cent loss in Ohio.

CRACK STEM (Undet.) caused some loss in Florida. In Michigan there was more than usual. This trouble is now thought to be due to an element deficiency or to an excess of soluble salts.

OTHER DISEASES. Root rot (Corticium vagum), New York and Missouri. Root rot (Phoma apiicola) and bacterial blight (Bacterium apii), New York. Blight (Bacillus sp.), New Jersey.

LETTUCE

BOTTOM ROT (Corticium vagum) was reported present in 2 counties in New York and in one New Jersey county. The loss in New York was estimated at 10 to 12 per cent. This is much less than it has been previously, due to the general adoption of control measures.

DOWNY MILDEW (Bremia lactucae). Reported from Massachusetts chiefly as a storage rot. Reported also from New York, New Jersey and Missouri.

DROP (Sclerotinia spp.) caused a loss of 1 per cent in Ohio. S. sclerotiorum occurred in Massachusetts but was less serious than in the past 10 years. It was present also in Connecticut, New York, Florida, where it caused a 10 per cent loss; Louisiana, where it was more prevalent than last year or in an average year; Missouri and Washington. The loss in some parts of Louisiana was 50 to 75 per cent. S. minor was reported from New York and New Jersey.

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ANTHRACNOSE (*Marssonina pannatoniana*). Reported from western Washington.

TIPBURN (Non-parasitic) caused a loss of 7 per cent in New York, and was reported also from Maine, New Jersey, and Wisconsin.

LEAF SPOT (*Septoria lactucae*) Connecticut, New York, and Missouri.

LEAF SPOT (*Bacterium marginale*). Missouri.

VIRUS DISEASES. YELLOWS caused a loss of 5 per cent in New York. This disease is serious in late summer on Staten Island and has caused growers to give up the production of late lettuce there. A few fields on muck soil in Oswego county lose 30 per cent of their crop every year. Yellows was reported also from Maine, where it caused losses ranging from a trace to 3 per cent. MOSAIC was general in New York. It was surprisingly prevalent on the spring crop on muck soil in Orange County, as much as 5 to 8 per cent loss being noted. This disease is seed-borne. The insect vectors of both mosaic and yellows were favored by lack of rain in New York.

PEA

DOWNY MILDEW (*Peronospora viciae*) was reported from New York, Mississippi, Wisconsin, and Washington. In Washington, 35 to 40 per cent of the pods of market-garden varieties were infected in some cases.

BACTERIAL BLIGHT (*Bacterium pisi*) was reported from New York, New Jersey, Maryland, Virginia, Florida, Wisconsin, and Colorado. Storm and hail injury were associated with infection in several reports. In Maryland there was much more than usual. Losses up to 75 per cent occurred in several fields.

ROOT AND STEM ROTS. In Maine, according to A. K. Gardner, total loss from root rots is not infrequent. Some gardeners are abandoning the growing of peas because of root rot. The loss in 1933 was estimated as 50 per cent. In Wisconsin, various organisms, including Aphanomyces, Pythium, Rhizoctonia, and Fusarium were associated in causing more root rot than usual. *Aphanomyces euteiches* was reported from New York, New Jersey, Maryland, and Wisconsin. The loss in Maryland was 4 per cent. In Wisconsin, the disease was severe in early June, and 100 per cent infection occurred in some fields. Rhizoctonia (*Corticium vagum*) was more prevalent than usual in New York, where the very early cold spring rains seemed to favor it, New Jersey, and Wisconsin, and was reported from Washington. *F. martii pisi* caused 1 per cent loss in Ohio, was more prevalent than usual in Wisconsin, and was reported from Colorado. *Sclerotinia sclerotiorum* was reported from Virginia and Washington.

FUSARIUM WILT. Wilt due to *Fusarium* sp. was reported as not common in New York. *F. orthoceras pisi* caused heavy losses in certain fields in Maryland, was said to be widespread and increasing in prevalence in central and southern Wisconsin, and was reported from Washington. In Wisconsin, the varieties Perfection, Surprise, and Hosford were said to be very susceptible, while Wisconsin Resistant Perfection, Maryland Alaska, and Senator were resistant. Wilt-resistant strains gave satisfaction in both Maryland and Wisconsin.

BLIGHT, POD SPOT, AND FOOT ROT (*Ascochyta* spp. and *Mycosphaerella pinodes*) were reported from New York and Maryland, *M. pinodes* from Wisconsin and Puerto Rico, and *A. pisi* from New Jersey and Mississippi. The use of western-grown seed has greatly decreased losses from this group of diseases.

DAMPING-OFF (*Pythium debaryanum*). Connecticut.

VIRUS DISEASES. Mosaic caused considerable loss in Maine. It was somewhat more prevalent than usual in New York, although not important. In New Jersey this is becoming one of the most important pea diseases and in 1933 it was much more prevalent than usual. It was reported on English peas from Arkansas. Mosaic was general in western Washington on market-garden varieties. Streak was also reported from Washington.

OTHER DISEASES AND INJURIES. Anthracnose and blotch (*Colletotrichum pisi* and *Septoria pisi*) were reported from Wisconsin. Powdery mildew (*Erysiphe polygoni*) New York, Wisconsin, Washington, Puerto Rico. Leaf spot (*Cercospora pisi-sativae*), Puerto Rico. Pod rot (*Botrytis* sp.), Washington. Pod spot (*Cladosporium pisi*), Oregon. *Verticillium* sp., Puerto Rico. Scorch, due to high temperature and low moisture, caused 50 per cent loss in Wisconsin. Bronzing (undetermined), Washington.

ASPARAGUS

RUST (*Puccinia asparagi*) was reported from Connecticut, New York, New Jersey, Maryland (1.5 per cent loss). Wisconsin, Missouri (1 per cent loss) and North Dakota.

STEM ROT, WILT (*Fusarium* sp.). Dwarf and stem rot caused a loss of 10 per cent in Massachusetts. The stem rot is becoming more important there. Stem rot was reported from Missouri, for the first time. Wilt was reported from New York and New Jersey. In New York, according to Chupp, the disease occurs only when temperatures are unusually high. The Fusarium isolated there has a reddish color and seems to be a variety of *F. vasinfectum*. Moldy tips due to *Fusarium* spp. were less common than usual on California asparagus examined at the New York market.

TIP WILT (*Botrytis* sp.) caused a loss of 5 per cent in Massachusetts.

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BEET

SCAB (Actinomyces scabies). Reported prevalent in New Jersey, Massachusetts, and Wisconsin. Unimportant.

CERCOSPORA LEAF SPOT (Cercospora beticola) occurred in Connecticut, New Jersey, Puerto Rico ("common but not severe"), Mississippi, Ohio, Wisconsin, and Kansas.

DAMPING OFF (Pythium sp.). Several cases of damping off were reported from Connecticut, New Jersey, and North Carolina.

CARROT

MACROSPORIUM LEAF BLIGHT (Macrosporium carotae) causes more damage annually in Massachusetts than all other field diseases combined. Destructive only in Connecticut Valley and certain eastern townships near large bodies of water. Losses up to 50 per cent were not uncommon in 1933. Reported also from New Jersey and Florida. In the latter State, the average estimated loss was 10 per cent.

SOFT ROT (Bacillus carotovorus). Reported only in New Jersey.

ROOT KNOT NEMATODE (Heterodera marioni). A single reported occurrence of root knot was received from Connecticut. Reported also from Arizona.

EGGPLANT

FRUIT ROT AND BLIGHT (Phomopsis vexans) was severe in Virginia and Florida, where it caused estimated losses of 3 and 12 per cent, respectively. It was also reported from Massachusetts, New York, New Jersey, Michigan, and Missouri.

WILT (Verticillium albo-atrum) caused 30 to 50 per cent loss in New York and was reported from New Jersey.

PEPPER

DAMPING OFF (Rhizoctonia solani). Reported from Connecticut and New Jersey.

SOUTHERN BLIGHT (Sclerotium rolfsii). Louisiana, Mississippi, and Georgia. In the last named State, it was observed on Pimiento pepper. In a field near Athens, 20 per cent of the plants were killed.

DOWNY MILDEW (Peronospora sp.). What seems to be tobacco downy mildew attacked tomato and pepper plants in North Carolina and peppers in South Carolina and Georgia. P. D. R. 17: 37-39.

WILT (Phytophthora capsici) was reported as locally prevalent and epidemic for the first time in Ohio. Also reported from Colorado, where it caused an average loss of 2 to 3 per cent.

BACTERIAL SPOT (Bacterium vesicatorium) was reported from Massachusetts and Mississippi. Unimportant.

MOSAIC (Virus). Mosaic was serious in Massachusetts. In the Connecticut Valley, it caused a crop loss in some instances amounting to as much as 10 to 25 per cent. In Florida, it was much more prevalent than usual. In Michigan, it was present in almost all plantings of peppers. Reported also from Kansas.

SPINACH

DOWNY MILDEW (Peronospora effusa) was much more prevalent and destructive in Virginia than in 1932 and more so than in an average year. It also was more prevalent than usual in Michigan and less so in Massachusetts. In Arkansas, downy mildew was severe on late fall-sown spinach in the western part of the State. The open winter of 1932-33 was unusually favorable to mildew development. Estimated percentage losses were as follows: Virginia, 25; Michigan, 5; Maryland, 0.5; Massachusetts, trace.

DAMPING OFF (Pythium debaryanum) was plentiful in Massachusetts in late seedings. Many growers were successful in controlling the disease with the red oxide treatment. Damping off was general and severe in Ohio, causing an estimated loss of 5 per cent. It was reported also from Genesee and Orleans Counties, New York.

RHUBARB

LEAF SPOT (Ascochyta rhei). Severe in a few fields in New Jersey. Reported from Arkansas as a limiting factor in rhubarb production.

SPOT NECROSIS (Virus) was reported from Okanogan County, Washington.

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DISEASES OF SPECIAL CROPS

TOBACCO

DOWNY MILDEW (*Peronospora* sp.) was reported from Pennsylvania, Maryland, Virginia, Tennessee, North Carolina, South Carolina, Georgia, and Florida. In Pennsylvania, such seed beds as were examined showed from a trace to 80 per cent infection. In Maryland, it was much more prevalent than in the preceding two years. It was observed in sterilized seed beds, last year's beds, and in beds planted for the first time in 1933. In Virginia, it was more prevalent than in former years; reported from 21 counties. In Tennessee, the disease was reported from 22 counties. It was impossible to estimate damage; but, as it occurred when plants were about ready to set out, the loss in some instances ran as high as 50 per cent. Reports from county agents in the Carolinas indicate that very few counties escaped the disease. It was reported prevalent in Florida and Georgia, but less destructive than in former years.

MOSAIC (Virus) was reported as more than usually prevalent in Maryland. It was reported also from Connecticut, Virginia, Kentucky, Florida, and Wisconsin. In Florida, it occurred on shade-wrapper tobacco, only.

RING SPOT (Virus). Maryland, Virginia, Kentucky. In the latter State, Valleau reports considerable evidence to show that weed hosts are more common sources of the disease where there has been any considerable extension of the disease.

BLACK ROOT ROT (*Thielavia basicola*). Maryland (0.5 per cent), Wisconsin (2 per cent), Tennessee (Prevalence and severity approximately same as last year).

WILD FIRE (*Bacterium tabacum*), Massachusetts, Wisconsin (trace); of local importance in seed beds (Massachusetts) and a few fields in Wisconsin. Dr. E. E. Clayton estimated an average loss of 2.5 per cent in beds near Marlboro, Maryland. He also reported that, following a severe August rain and windstorm, the disease developed in epidemic form throughout Maryland and Pennsylvania. The losses were about 20 per cent for Maryland and 50 per cent for Pennsylvania. The greater loss in the latter area was due (a) to the very leaf-spot susceptible type of tobacco grown and (b) to the fact that the crop is used in the manufacture of cigars and damaged leaves have little value.

BLACK FIRE (*Bacterium angulatum*). Maryland (0.5 per cent), Virginia (observed in 16 counties; heavy loss, maximum of 40 per cent in a few instances), Kentucky. According to Valleau, black fire occurred in a few areas in the western part of Kentucky following heavy, late-season rains. He was unable to produce typical black fire with *B. angulatum*.

BLACK SHANK (*Phytophthora parasitica*). Florida. Observations were confined to shade-wrapper tobacco. Reported also from Puerto Rico.

LEAF SPOT (Cercospora nicotianae). Tennessee, Puerto Rico, and Florida.

FRENCHING (Non-parasitic) was reported from Maryland (trace), from 10 counties in Virginia, and from Kentucky, where it was much more prevalent than last year and than in an average year. Valleau observed that it was confined largely to tobacco on thinner soils or where lime had been added.

FUSARIUM WILT (Fusarium oxysporum nicotianae). Maryland.

ROOT KNOT (Heterodera marioni)was reported from North Carolina as the most outstanding disease throughout the entire tobacco area of the State. It caused more loss than all other tobacco diseases together.

DAMPING OFF (Pythium and Rhizoctonia). Massachusetts, where it caused an average loss of 15 per cent.

POTASH HUNGER. Wisconsin, very infrequent; New Jersey.

BACTERIAL WILT (Bacterium solanacearum). Puerto Rico.

COTTON

ANTHRACNOSE (Glomerella gossypii) was much more prevalent than last year in Arkansas, causing an estimated loss of 5 per cent and maximum losses approximating 70 per cent. It was reported also from Missouri, where the loss was estimated at 2.5 per cent. According to D. C. Neal, it "was observed on seedlings near Minden, Louisiana. There was very little evidence of the disease on cotton bolls in localities visited in southern and central Mississippi and Louisiana."

ANGULAR LEAF SPOT (Bacterium malvacearum). According to Neal, angular leaf spot was present in about the same degree as it was in 1932 in the blacklands of Texas, in southern Mississippi, and in northern and central Louisiana. He estimated the loss at about 1 per cent.

DAMPING OFF, SORE SHIN, AND SEEDLING BLIGHT (Corticium vagum). Occurred in Texas, Mississippi, Louisiana, and Arkansas. Damage generally negligible, except in Arkansas and in a few fields in northern Louisiana, where stands were materially reduced. Various species of nematodes were found to be associated with sore-shin in Arkansas. P. D. R. 17:62.

ROOT ROT (Phymatotrichum omnivorum) in Texas, was favored by weather conditions, i.e., rain and high temperature in late July and early August. The damage is hard to determine, but this is one of the most destructive of the cotton diseases of the southwest. Taubenhaus estimated the loss at 12 per cent.

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FUSARIUM WILT (Fusarium vasinfectum). D. C. Neal states: "This disease was present again, as usual, in the light sandy-loam soils of Arkansas, Louisiana, Mississippi, and Texas. It was also observed in a few counties (Hunt, Collin, and Grayson) in the black-land section of Texas, and in one field in this region near Greenville. The damage was about 10 per cent. Resistant varieties are being planted in several of wilt infested districts with favorable results."

VERTICILLIUM WILT (Verticillium albo-atrum) was present in several counties in the Mississippi Delta and was reported also from Oklahoma. Damage, where observed, was somewhat less than that recorded in 1932.

RUST. Puccinia schedonnardi was collected in Haskell County, Oklahoma. This is the first recorded incidence of cotton rust in that State. It was also reported from Texas. A severe outbreak of Cerotelium desmium was reported as occurring on Meade cotton at Sabana Grande Demonstration Farm, Puerto Rico.

POTASH HUNGER (Nonparasitic). This disease was very prevalent in the lighter soils of Arkansas and eastern Texas. It was observed also in the coastal-plain counties of Louisiana, Mississippi, and Alabama and in the Carolinas. Losses have been measurably reduced by use of certain leguminous crops to restore soil fertility.

ROOT KNOT (Heterodera marioni). Reported as prevalent on Pima cotton in Texas. Locally, very severe in southern Mississippi, killing the plants in many instances.

PEANUT

CERCOSPORA LEAF SPOT (Cercospora spp.) Reported as more or less prevalent in Georgia, Arkansas, Missouri, and Puerto Rico. Unimportant.
WILT (Fusarium vasinfectum). Appeared for first time in Missouri.
RUST (Puccinia arachidis). Very abundant in Puerto Rico, probably the most important disease of the crop. WILT (Fusarium vasinfectum). Observed in Missouri, for first time, in 1933. Locally distributed.

HOP

DOWNY MILDEW (Pseudoperonospora humuli) was reported from New York and Oregon. A survey of the hop yards of Otsego and Oneida counties in New York showed downy mildew present on the lower leaves of the plants. In Oregon, the disease appeared in early spring. It gained great headway because of the rains of May and June, and serious damage resulted. In certain individual cases, there was damage amounting to a total loss.

DISEASES OF SUGAR CROPS

SUGAR CANE

MOSAIC (Virus). In Louisiana, greatly increased acreages of the apparently mosaic-immune C. P. 807, bred by the U. S. D. A., have further reduced the economic significance of this disease. The remaining commercial varieties, while "tolerant" toward infection and productive in comparison with the formerly grown D-74 and Louisiana Purple, are, nevertheless, damaged from year to year to a varying degree. This is important in view of the extensive mosaic spread noted again in 1933 on the CO. 281, now one of the most widely planted varieties in Louisiana. Infection ranged from a mere trace in the Bunkie area to over 90 per cent on a river plantation near Plaquemine.

SHEATH ROT (Cytospora sacchari), according to E. V. Abbott, was observed spreading rapidly from about May 15 till August 1 at Houma, Louisiana, Field Station. The effect of the disease on susceptible varieties was to retard or prevent the development of tillers. Among the more promising seedlings being tested at the Houma Station for their commercial value, infection ranged from 3 to 38 per cent, with indications of appreciable economic losses under certain conditions in the cases of C. P. 28/19 and 29/320. The disease was observed at one time or another on all of the commercial varieties except CO. 290, but infection was never more than 5 per cent.

RED ROT (Colletotrichum falcatum). Considerable damage to seed cane during the year was confined to variety P. O. J. 213, which previously had shown marked susceptibility to red rot, according to reports from Louisiana. In spite of warnings against further planting of this variety on heavy soils, some 115 acres on 2 plantations were observed in which the stand was less than 50 per cent and resulting yields were so low as to render them unfit for a stubble crop. Red-rot damage to standing cane was of less importance than in any of the previous 3 years. This may be ascribed to the generally light borer infestation early in the season and to the relatively smaller acreage of P. O. J. 213.

ROOT ROT (Pythium arrhenomanes) caused unusually extensive losses in tonnage of CO. 281 and P. O. J. varieties in Louisiana, wherever they had been planted in heavy clays or so-called black lands. The moisture-holding capacity of about 40 per cent of the land of the sugar-cane district was accentuated by the cold, wet spring of 1933. CO. 281 was markedly retarded in initial growth and suckering.

POKKAH-BONG (Fusarium moniliforme), according to E. V. Abbott, was less prevalent in Louisiana than at any time during the past 4 years, due, presumably, to the unusually dry weather of early summer and fall. Occasional cases of RED STRIPE (Bacterium rubrilineans) and MOTTLED STRIPE (B.rubrisubalb cans) were noted among susceptible seedlings; and a nonidentified BROWN SPOT continued to be common but unimportant on C. P. 28/19, C. P. 29/320, CO. 281, and C. P. 807.

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SUGAR BEET

The following summary was furnished by G. H. Coons:

DAMPING OFF (Pythium spp., Corticium vagum, Aphanomyces spp., Phoma betae) was less serious than usual in Michigan and Ohio, good stands commonly being secured. In Minnesota, considerable injury to stands occurred, seed treatment with fungicides being beneficial. The disease was apparently minor in importance in western areas. Improved stands reported from Salinas and Sacramento Valleys of California following rather general use of ridge-planting method with sugar beets.

ROOT ROT (Corticium vagum, Phoma betae) was reported prevalent in Ohio, Michigan, and Wisconsin. Its prevalence was about as usual; Michigan and Ohio estimating losses at 2 and 1 per cent, respectively; Wisconsin reporting the crown-rot type (Corticium) as of rare incidence. The form of root rot reported from Utah as Late Blight was again serious on dolomitic soils. From rotted roots Phoma betae is commonly isolated, but experimental evidence indicates phosphate deficiency is primarily responsible for the condition.

LEAF SPOT (Cercospora beticola) was reported as having caused a loss of 1 per cent in Ohio. According to Federal field station reports it was of relatively minor importance in eastern beet-growing areas, except Ohio, and fairly severe in the bottom land areas of southern Minnesota. Considerable loss occurred in Nebraska and northern Colorado. Indications of loss occurring in northern Colorado are given by results of spraying and dusting tests at Fort Morgan, Colorado, in which tonnage gains of approximately 2-1/2 tons per acre were obtained from fungicide applications as compared with yields of check plots. In the same test, the average sucrose percentage of all treated plots was 16.6 per cent, that of the untreated 15.3 per cent. Apparent coefficients of purity were in favor of treated plots. In the Arkansas Valley of southern Colorado, where leaf spot frequently produces heavy loss in tonnage and marked depreciation in quality, sprayed or dusted plots were not significantly better in yield or quality than the control plots, indicating slight effects from leaf-spot disease.

STEM ROT (Sclerotium rolfsii) was found in 1931 as a serious infestation in several fields in central California. Since that time, additional cases of serious field infestation have been located. In 1932, it was observed again in Orange County, the first record being that of Carsner in 1921. D. G. Milbrath reports Sclerotium rolfsii in 1933 as present in the following counties: Solano, San Joaquin, Alameda, Los Angeles, and Orange. L. D. Leach and C. E. Scott list, in addition, Fresno, Ventura, Monterey, Santa Cruz, Santa Clara, and Kern as counties from which collections have been made.

CURLY TOP (Virus) did not produce its usual losses in California, Idaho, and Utah, good tonnages being generally reported, and tests in areas normally having severe exposure indicated only slight reduction due to the disease. Western Colorado suffered severely as a result of heavy beet leaf-hopper influx, tonnage reductions reaching 25 to 50 per cent in case of late plantings in some areas. In several comparative tests under moderately severe beet leaf-hopper exposure, the U. S. No. 1 variety exceeded ordinary commercial brands by 2 or 3 tons per acre as an average.

DISEASES OF TREES

HARDWOODS

NECTRIA CANKERS. D. S. Welch reports the results of a survey in New England and New York in the Plant Disease Reporter, vol. 18, pp.21-22, March 15, 1934.

ACER SPP. MAPLE. Coniosporium corticale was reported as parasitic on maple in two localities in Wisconsin. Canker (Cytospora sp.), was reported from New Jersey, on A. platanoides. Wood rot (Fomes applanatus) was noted on A. saccharum in Connecticut. Anthracnose: Gloeosporium apocryptum occurred on A. platanoides in Vermont and New York, and on A. saccharum in New Jersey; G. saccharini on Acer sp. and A. dasycarpum in Connecticut. Heart rot (Hydnum septentrionale) was noted on A. saccharum in Connecticut and Minnesota. In the latter State it is said to be present in most of the fire-scarred trees in the region of Red Lake. Canker (Phomopsis sp.) was reported from New Jersey, on A. palmatum and A. platanoides. Phragmotrichum sp. was reported as a secondary parasite on A. platanoides in New Jersey. Leaf spot (Phyllosticta minima /P. acericola/), was severe in two nurseries observed in Tennessee, caused severe blighting of A. dasycarpum shade trees in North Carolina, and was also reported from Pennsylvania. Root rot (Phymatotrichum omnivorum), Texas. Tar spot (Rhytisma acerinum), was generally reported, as usual. Where mentioned, the species affected were as follows: A. dasycarpum in Connecticut, Michigan, Wisconsin, and Minnesota; A. rubrum in Connecticut and Missouri. Rhytisma punctatum was reported from Massachusetts, and on A. spicatum from Minnesota. Tubercularia vulgaris was observed on A. palmatum in Connecticut. Verticillium sp. causing wilt was reported from Ohio, Michigan, Wisconsin, and Missouri; V. alboatrum from Massachusetts, and on A. platanoides and A. saccharum from Connecticut; V. dahliae on A. palmatum in Connecticut and A. platanoides in New Jersey. In Michigan trees that showed infection and were fertilized during previous years are still in excellent condition and do not show recurrence of wilt symptoms, according to F. C. Strong. Leaf scorch (non-parasitic), New York, North Carolina, and Ohio.

AESCULUS SPP. BUCKEYE, HORSE CHESTNUT. Blight (Botryosphaeria ribis) was reported on two horse chestnut trees (A. hippocastanum) in New York. Both trees were severely affected. Many lesions on the petioles caused wilting and death of the leaves giving the trees a burned or blighted appearance. The infection was mostly at the tips of branches (C. Guterman).

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Leaf blotch (*Guignardia aesculi* [*Phyllosticta paviae*]), was widespread as usual. In New York it was very severe on horse chestnut, many trees being completely defoliated by the middle of September.

ARONIA MELANOCARPA. BLACK CHOKEBERRY. *Gymnosporangium clavipes*, Connecticut.

CARPINUS SPP. HORNBEAM. Canker (*Nectria galligena*) was observed on *C. caroliniana* in Connecticut.

CASTANEA SPP. CHESTNUT. Blight (*Endothia parasitica*) on American chesnut (*C. dentata*). The status of this disease will be reported in the 1934 summary. It was found on *C. japonica* in Connecticut. *Schizophyllum commune* occurred on dead bark of *C. dentata*, Oregon. Leaf spot (*Septoria* sp.) was noted in Mississippi. Dying of *C. dentata*, cause undetermined, was reported from Oregon.

CRATAEGUS SPP. HAWTHORN. Blight (*Bacillus amylovorus*) was reported as follows: It occurred on *C. oxyacantha* in New Jersey. It was found on one tree of English hawthorn in West Virginia. Both native and ornamental species were heavily infected in North Carolina. It was noted on Paul's Scarlet Thorn (*C. oxyacantha paulii*) in five plantings in Kansas City, Missouri, apparently the first report of the disease on hawthorn for the State. Leaf spot (*Entomosporium thuemenii*) was reported from New Jersey and on *C. oxyacantha* from Alabama. Rust: *Gymnosporangium* spp. were reported from Pennsylvania, Alabama, where practically every leaf of a block of 10,000 Paul Scarlet Thorn trees in a nursery was infected, Wisconsin, and Minnesota. *G. clavipes* (*G. germinale*) occurred on *Crataegus* sp., *C. crus-galli*, and *C. oxyacantha*, in Connecticut, and on *C. oxyacantha* in New Jersey. *G. globosum* was reported from Massachusetts, from Connecticut on *Crataegus* sp. *C. crus-galli*, and *C. oxyacantha*, and from Tennessee on *C. oxyacantha*.

FRAXINUS SPP. ASH. Heart rot (*Fomes fraxinophilus*) occurred in North Dakota, on *F. lanceolata*. Root rot (*Phymatotrichum omnivorum*) was reported on *F. velutina* in Arizona. Leaf spot (*Septoria leucostoma*) was noted on *F. texensis* in Texas. Canker (*Sphaeropsis* sp.) was reported from New Jersey, on *F. americana*.

GREVILLEA ROBUSTA. SILK-OAK. Root rot (*Phymatotrichum omnivorum*) was reported from Arizona. It does not seem to have been reported on this host previously.

ILEX SPP. HOLLY. Leaf spot of American holly (*I. opaca*) caused by *Sphaeropsis* sp. was reported from New Jersey.

JUGLANS SPP. WALNUT. Wood rot (*Fomes igniarius*) was reported on butternut (*J. cinerea*) from Connecticut, the first report from the State. Black walnut (*J. nigra*): Blight (*Bacterium juglandis*) was reported from New Jersey. It is apparently very rare on this species. Leaf spot (*Cylindrosporium juglandis*) was reported from Tennessee. Canker (*Cytospora* sp.) was reported on *J. rupestris* from Arizona.

LIRIODENDRON TULIPIFERA. TULIP TREE. Leaf spot (*Rhytisma liriodendri*) was reported from New Jersey. This disease is rarely reported.

PLATANUS SPP. PLANETREE. Anthracnose (*Gnomonia veneta*) of American planetree (*P. occidentalis*) was generally less prevalent than usual. In Michigan, F. C. Strong reported that "What appeared to be the beginning of an epiphytotic on twigs and leaves was abruptly stopped by a period of dry weather accompanied by high temperatures early in June. No defoliation resulted and very little infectious material was left to winter over, except in twigs." Powdery mildew (*Microsphaera alni*) was reported on London planetree (*P. acerifolia*) from New Jersey.

POPULUS SPP. POPLAR, COTTONWOOD, ASPEN. Cankers. *Cytospora chrysosperma* was reported on *P. alba* (white poplar) from New Jersey, from Massachusetts on *P. bolleana*, from Minnesota on quaking aspen (*P. tremuloides*) and from Texas. In Minnesota the very dry summer predisposed trees to attack. European canker (*Dothichiza populea*) was reported from Massachusetts, Mississippi, Wisconsin, and Missouri. In Missouri it occurs mostly on the Lombardy poplar (*P. nigra italica*). *Hypoxylon pruinatum* was reported only from Minnesota, on quaking aspen and on largetooth aspen (*P. grandidentata*). It was not found on other species of Populus. As much as 75 per cent infection was noted in some stands. Quaking aspen is most severely affected. Also reported from Minnesota were bark canker (*Macrophoma tumefaciens*) and canker caused by *Nectria* sp., both attacking mostly the susceptible quaking aspen. The largetooth aspen is very resistant to both cankers, while *P. deltoides* (cottonwood) is very resistant to the Nectria and apparently immune from attack by the bark canker. The bark canker is more common on trees suffering from lack of moisture, but it does not cause actual losses except when girdling kills very young trees. The Nectria canker occurs principally on poor sites.

Crown gall (*Bacterium tumefaciens*) was reported from Texas.

A twig blight due to *Diplodia* sp. was reported from Texas. *Napicladium tremulae* caused twig blight of quaking aspen in Minnesota. Dieback (*Sphaeropsis* sp.) was noted in New Jersey.

Root rots (*Armillaria mellea* and *Phymatotrichum omnivorum*) were reported from Texas, the latter also from Arizona. White rot (*Fomes igniarius*) was said to be important in all aspen stands throughout Minnesota.

Scab (*Fusicladium radiosum* = *Venturia tremulae*) occurred on quaking aspen in Connecticut and Pennsylvania. Anthracnose (*Marssonia* sp.) was common in New York on *P. deltoides*, largetooth aspen, quaking aspen, and white poplar. It was also reported from Mississippi. Leaf spot (*Sclerotium bifrons*) was reported from Minnesota, on quaking aspen. *Septoria* sp. was reported from Mississippi, and *S. musina* on *P. deltoides* from New York. *Taphrina johansonii* occurs on the female catkins of largetooth and

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quaking aspens in New York. It is abundant on some trees. Powdery mildew (Uncinula salicis) was reported from Minnesota on quaking aspen. It occurs principally on trees near the margins of lakes and swamps in the northern part of the State.

QUERCUS SPP. OAK. Among diseases reported on oak trees may be mentioned the following: Anthracnose (Gnomonia veneta) occurred in the usual amounts in the New England States. It was less prevalent than usual in Michigan and Wisconsin. Diplodia sp. caused dieback of white oak in Texas. A dieback of Q. montana in New Jersey was due to Diplodia longispora. In Minnesota Sphaeropsis malorum caused dieback. It was present in the tops of most of the trees that were being killed by drought and by Armillaria mellea. Root rot due to Armillaria mellea was reported from New Jersey, Wisconsin, and Minnesota. The red oak, Q. rubra ambigua, seemed to be most severely injured in Minnesota, and dry weather predisposed trees to attack. Wood rot (Fomes applanatus) was reported on Q. alba from Connecticut. Powdery mildew (Phyllactinia corylea) was reported from New Jersey, and leaf spot (Phyllosticta sp.) occurred on Q. alba in New York. Canker due to Cytospora sp. was noted in New Jersey.

SALIX SPP. WILLOW. Crown gall (Bacterium tumefaciens) was reported from Mississippi. Dieback and canker (Cytospora chrysosperma) was reported from Massachusetts, New Jersey, Wisconsin, and Minnesota. Scab (Fusicladium saliciperdum) was much less severe than usual in all parts of Massachusetts except Berkshire County where it was very destructive. In Connecticut it was said to be less prevalent than usual. In New York there was the usual amount. The disease was reported to be killing trees in Sullivan County, Pennsylvania, and occurred also in other parts of the State. Root knot (Heterodera marioni) was observed on willow in Mississippi. Stem blights due to Macrophoma sp. and Sphaeropsis salicis occurred in Texas. Root rot (Phymatotrichum omnivorum) was also reported from Texas, on weeping willow.

SCHINUS MOLLE. CALIFORNIA PEPPER TREE. Root knot (Heterodera marioni) was reported from Texas, and root rot (Phymatotrichum omnivorum) from Texas and Arizona.

SORBUS SPP. MOUNTAIN ASH. Blight (Bacillus amylovorus) was observed on S. americana in New Jersey and on S. aucuparia in New York. In New York it was more prevalent than it usually is on mountain ash. Canker due to Cytospora sp. was very common in Minneapolis and St. Paul, Minnesota, especially on young trees set out in the spring. Here again, drought favored attack by the fungus. Cytospora sp. in conjunction with the San Jose scale caused canker in Washington. C. massariana caused dying of the outer parts of practically all branches of a tree of S. americana observed in Twin Falls, Idaho. Rust (Gymnosporangium aurantiacum) was reported from Michigan on S. americana.

TILIA AMERICANA. AMERICAN LINDEN. Leaf spot (Phyllosticta tiliae) was reported from New Jersey, and root rot (Phymatotrichum omnivorum) from Texas.

ULMUS SPP. ELM. Dutch elm disease (*Ceratostomella ulmi*). Mr. R. Kent Beattie reports as follows on the Dutch elm disease: Centering around New York City an entirely new and very serious infection of about 850 trees was discovered. Most of them were in New York and New Jersey, but 2 were in Connecticut. One infected tree was found in Cleveland, Ohio, and one in Baltimore, Maryland. In August it was discovered that the fungus was being introduced from Europe in burl elm logs imported for the cutting of fancy veneer. Consequently, elm trees in the vicinity of piers where such logs are landed, railroads transporting them, and veneer plants utilizing them may have been exposed to the disease.

Die back (*Cephalosporium* sp.) was reported from New Jersey, on *U. americana*. Leaf spot (*Coniothyrium ulmi*) was reported on Siberian elm from West Virginia. Previously it had only been known from Texas on *U. campestris*. Leaf spot (*Didymosphaeria* sp.) was reported from Texas on Chinese elm. Anthracnose (*Gnomonia ulmea*) was reported from several States. In Massachusetts, New York, New Jersey, Virginia, and Missouri it was said to be more prevalent than usual; in other States there was the usual amount. *Nectria cinnabarina* was observed on *U. pumila* in Connecticut. Canker caused by *Phomopsis* sp. was reported from Wisconsin on Chinese elm. Root rot (*Phymatotrichum omnivorum*) was noted on Chinese elm in Texas and Arizona, and in Texas also on the American elm. *Pleurotus sapidus* was the cause of wood rot of a living American elm in Connecticut. *Sacidium ulmigallae* was reported on Chinese elm in Texas. Canker or wilt caused by *Sphaeropsis* sp. has been of some importance in Wisconsin, but roguing in nurseries is checking its spread. *Sphaeropsis malorum* caused canker of *U. pumila* in Connecticut. Verticillium wilt of American elm was reported from Ohio (*V. albo-atrum*), and New Jersey (*V. dahliae*). Chlorosis, apparently due to a virus, was reported from New Jersey and Massachusetts.

GINKGOALES

GINKGO BILOBA. MAIDENHAIR-TREE. Root knot (*Heterodera marioni*) was reported from Mississippi. This is a new host for the root-knot nematode.

CONIFERS

WHITE PINE BLISTER RUST. The following statement on the status of the white pine blister rust due to *Cronartium ribicola* has been furnished by J. F. Martin, of the Division of Plant Disease Eradication and Control, Bureau of Entomology:

Control of the Disease: During 1933 the program to control the white pine blister rust on pine-producing areas in the United States was greatly benefited by the results achieved under the National Industrial Recovery Act and the Civilian Conservation Corps. A tentative summary of the control work performed under these two emergency programs shows that 673,376 acres of land were cleared of 59,352,202 Ribes by 399,774 man days

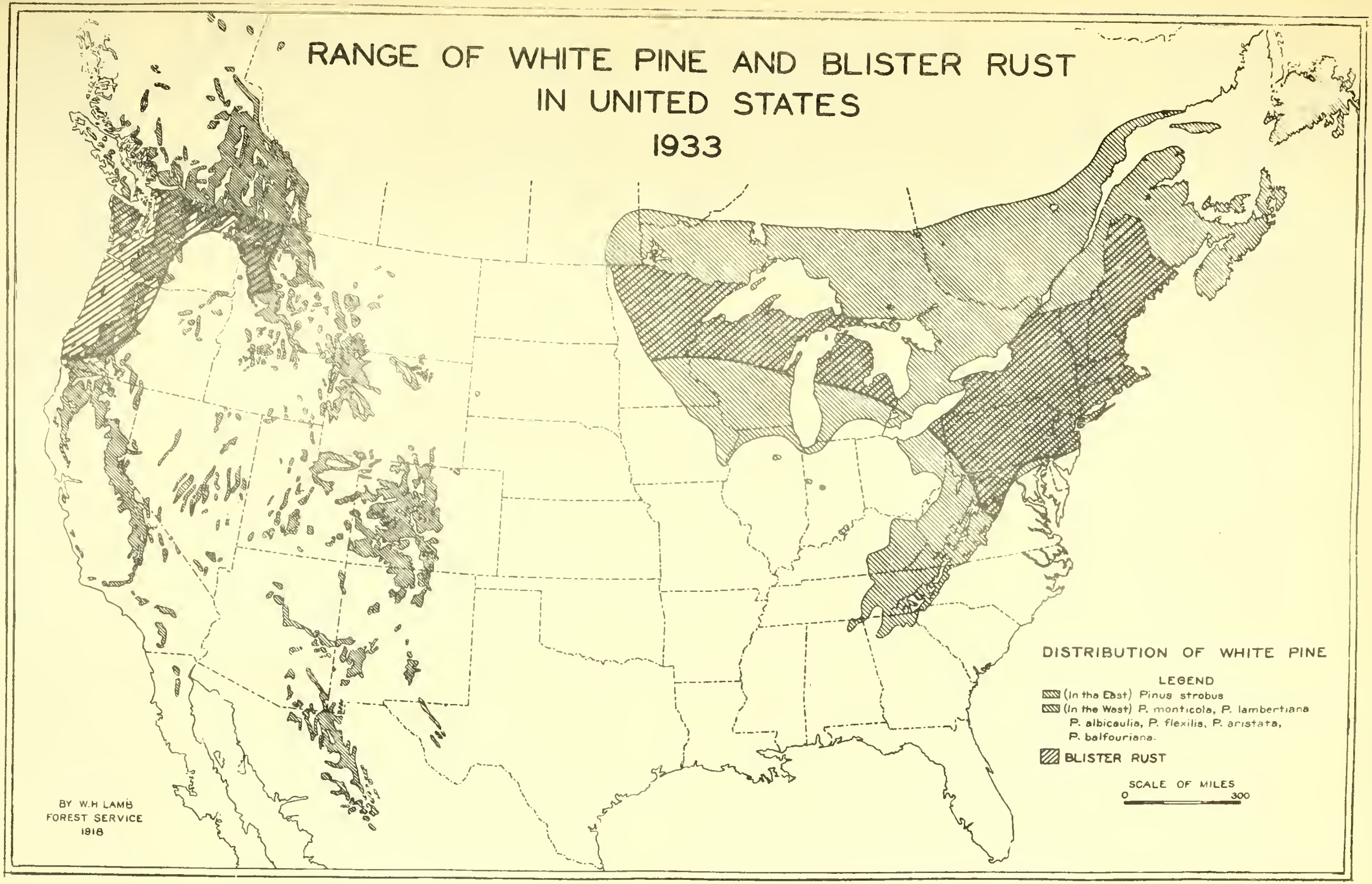
RANGE OF WHITE PINE AND BLISTER RUST
IN UNITED STATES
1933
DISTRIBUTION OF WHITE PINE
LEGEND
▨ (In the East) Pinus strobus
▨ (In the West) P. monticola, P. lambertiana
P. albicaulis, P. flexilis, P. aristata,
P. balfouriana.
▨ BLISTER RUST
SCALE OF MILES
0
300
BY W.H. LAMB
FOREST SERVICE
1918

Fig. 21. Range of white pines and of blister rust in the United States, 1933. (Map supplied by J. F. Martin).

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of labor. The number of men varied from day to day, but when field activity under these programs reached its peak, there were 13,401 laborers, foremen, and checkers on this work. In addition, the regular blister-rust-control program that is carried on annually in cooperation with the affected States and other agencies resulted in the eradication of 9,197,819 Ribes from 332,687 acres of pine land with 51,843 man days of labor.

Spread of the Disease: Since the spread of this disease is influenced by local climatic conditions, host plant associations, and other factors, it is discussed separately for each of the principal white pine regions of the country.

Northeastern Region: Blister Rust and Ribes are generally distributed throughout this region, and diseased white pines (Pinus strobus) occur in more or less abundance in the different townships. Each year the production and dissemination of enormous numbers of aeciospores causes widespread infection on Ribes and any white pines growing in proximity to these bushes are exposed to infection. In time, these pines become diseased and as long as the two host plants remain near each other, the rust spreads back and forth, damage accumulates on the pines, and ultimately they are killed. Under such conditions the white pines cannot survive unless the Ribes are eradicated. The removal of these bushes in pine-producing areas will establish control of the disease and it can then be maintained by periodic inspection and reworking of these areas to prevent their repopulation with Ribes.

In the establishment and maintenance of control conditions on pine-producing areas in the Northeastern region, over 100 million Ribes have been destroyed on about 10,000,000 acres of land. The elimination of this large number of Ribes from millions of acres of pine-producing land has had a marked effect in checking the spread of the disease and preventing damage to white pines. Careful inspection of areas that have been eradicated of Ribes show but few cankers originating since the bushes were removed while in similar uneradicated areas they are plentiful. Old cankers are numerous because it has been possible to work only a portion of the white pine acreage each year, and meanwhile infections take place on the pines in the unworked portions. Prevention of the continued serious spread of the disease and resultant damage is an accomplished fact on those areas on which Ribes have been eradicated, but in this region there are still many pine areas awaiting the application of control measures. Also to keep the disease under control on protected areas and derive the full benefit of the work already done, it is necessary to rework them periodically to eradicate missed bushes, sprouts, and those that develop from seed.

Ribes infection was more or less general throughout the New England States, New York, Pennsylvania, and New Jersey in 1933. A large number of Ribes nigrum were eradicated in New York and these plants were heavily infected with the rust. Following a period of dry weather, partial, and in some cases, complete defoliation of Ribes became very noticeable during the latter part of July and the first part of August, particularly in Vermont, northeastern New York, and central and northern New Hampshire. Rains in the late summer aided the development of a new crop of Ribes leaves in many instances and these were frequently found infected with blister rust.

Southern Appalachian Region: In this region blister rust was found for the first time in additional counties in Maryland, Virginia, and West Virginia. Several diseased Ribes rotundifolium were located near Oakland, Garrett County, Maryland. In West Virginia, a single plant of this same species was found diseased about 12 miles north of Huntersville in Pocahontas County. Infected white pines were found for the first time in three places in the North River Valley, Augusta County, Virginia. These pine infection centers are in the George Washington National Forest. One of them covered 1-1/2 acres, with 23 out of 40 white pines, or 58 per cent, infected with blister rust. On this particular area the infection appears to have first occurred on the pine in 1924. There were 11 R. cynosbati bushes on the area and these were infected. Also, the rust was found on white pine and Ribes in Madison County along Skyline Drive in the proposed Shenandoah National Park. These discoveries show that the rust is gradually spreading southward and that as early as 1924 it became established on pine in Virginia.

North Central and Lake Region: In this region the rust was discovered in counties not previously known to be infected. Only a very small area remains in the white pine section of the three Lake States in which diseased pines or Ribes have not been found. In Upper Michigan two pine infection centers were found for the first time in Houghton County, where cultivated black currants are very extensively planted and heavily infected annually. In Marquette County the known range of pine infection was extended about 10 miles eastward and is now near the city of Marquette. A new center of blister rust infection on white pines was found near Iron Mountain in Dickinson County. Approximately 30 to 50 per cent of the white pines on a 17-acre tract were infected. Analysis of cankers showed that a severe wave of infection took place in 1927. Ribes infection was found for the first time in Schoolcraft County. Infection on R. nigrum was found particularly heavy near the city of Manistique where 400 of the 500 bushes destroyed were diseased. In Lower Michigan no severe outbreak of blister rust on pines has been discovered, but Ribes infection was found for the first time in Crawford County.

In Wisconsin pine infection was found for the first time in Bayfield and Forest Counties and Ribes infection in Bayfield, Langlade, Vilas, and Oneida Counties. The total number of infected counties is now 36, in 19 of which Ribes have been found diseased, while pine and Ribes have been found infected in 17 counties.

In Minnesota pine infection was reported for the first time in Carleton, Cook, Cass, and Beltrami Counties. On Ribes, the rust was found for the first time in Becker and Clearwater Counties. In addition new pine and Ribes infection centers were found in several counties previously reported as infected. The white pine on the infection area found in Cook County

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was severely damaged. About 60 per cent of the trees were infected on approximately 10 acres of well stocked white pine, and many of the trees were dead or dying. This infection was found near Caribou Creek on the Superior National Forest and the diseased trees were immediately destroyed. Infection probably originated on this area about 1920 or 1921.

Although a considerable amount of scouting was done in Ohio, Indiana, Illinois, and Iowa, no infection was found except on cultivated black currants, R. nigrum, in Ashtabula County, Ohio.

Northwestern Region:

Inland Empire -(Northeastern Washington, Northern Idaho and Northwestern Montana): An extremely critical situation exists in the western white pine belt of the Inland Empire because of the great economic importance of this species (Pinus monticola) and its high degree of susceptibility to the rust. Host-plant associations are so favorable for the rapid spread and intensification of the disease that the existence of the western white pine as a forest tree in this region is dependent upon the control of blister rust. Including the work done in 1933, about one-fifth of the control area has been given initial protection and control conditions must be established promptly on the remainder of the area to avoid tremendous losses. Efforts are centered on the control of the disease on an area of 3 million acres containing the best of the land and timber, and the making of this area safe for the continued production of white pine. Even in this restricted area more or less serious damage will occur, depending upon the rapidity with which control measures are applied.

During the past season many heavy centers of young infection on pine were observed in Idaho and some of the trees about 10 feet in height had 1,000 cankers, mostly of 1931 origin. An exceptionally extensive and severe pine infection was located on Brown's Creek about 7 miles south of Pierce, Idaho. In this area young trees were completely cankered over the needle-bearing portion of the trees at the time of exposure. Two major waves of infection were apparent, the latest occurring in 1931. A heavy storm which swept over this area in 1933, blew down a number of large trees 150 to 200 feet in height and 2 to 4 feet D. B. H. A careful examination of the crowns of these pines showed that enough cankers were distributed through their crowns to kill them ultimately. Another area of pine infection 2-1/2 miles in length was found on French Creek. A number of severely infected trees were found on this area with cankers of 1923 and 1931 origin. These observations show the severity with which the disease attacks the western white pine and indicates the destruction of this species that may be expected as the rust gains momentum on unprotected areas.

For several years it has been noted that the spread of the disease along the streams in this region has been quite general but undoubtedly 1933 has been very favorable for the infection of upland Ribes. The two major reasons for this appear to be:

(1) An usually large volume of aeciospores. A large portion of these came from 1930 origin cankers fruiting for the first time in 1933. These are very abundant as a result of the heavy production of aecia in 1930 from 1927 origin cankers which were formed in the first major wave of infection after the rust reached this region in 1923. In tabular form the progressive spread of the rust appears to be as follows:

1923. Year the disease reached the Inland Empire.

1926-27. First and second aecial production from 1923 origin cankers. Since 1927 was an exceptionally favorable year for rust development, very many new cankers were formed.

1930. First aecial production from the large number of 1927 origin cankers and a general spread to Ribes.

1933. First aecial production from the tremendous number of 1930 origin cankers. Also heavy production by all other aecia-producing cankers that were formed in the years 1923 and 1926-1929.

(2) Favorable weather conditions for Ribes infection in June, August, and September, although the usual early-season development in May and the first part of June was lacking this year.

There were 13 additional pine infection centers discovered in the Inland Empire region in 1933 as follows:

Place	Number of Pine Infection Centers
Coeur d'Alene National Forest	1
St. Joe National Forest	2
Clearwater National Forest	1
Potlatch Timber Protective Association	3
Clearwater Timber Protective Assn.	6
Total	13

Oregon: Three new centers of infection were found in Oregon at widely separated points as follows:

Ribes Infection:

(1) Headwaters of the John Day River on *Ribes petiolare* near Austin (T.11S., R.35 E.) approximately 150 miles east of Mt. Jefferson.

(2) Headwaters of the Deschutes River on *Ribes petiolare* near Lava Lake (T.19 S., R. 8 E.) about 50 miles southeast of Mt. Jefferson.

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Pine Infection:

(1) Mt. Bohemia (T.23 S., R. 1 E.) at the headwaters of the Umpqua River flowing south and west, on western white pine, about 90 miles southeast of Mt. Jefferson.

The finding of these three infection centers is of special significance and importance. The first one is on the east side of the Cascade Mountains. This indicates the rust can, and probably is, advancing southward toward the sugar pine belt of California by two routes, the inland route east of the Cascades and the coast route west of the Cascades. The other two centers are reminders that the rust is advancing southward in Oregon. The Mt. Bohemia pine infection center which originated about 1927 is evidence of the fact that 6 years ago the rust was established on pine within 110 miles of the Oregon-California line.

ABIES SPP. FIR. Root rot (Armillaria mellea), rust (Melampsorella cerastii), and heart rot (Polyporus balsameus and Poria subacida), were reported from Minnesota on A. balsamea. The heart rot is common in all stands of balsam fir, especially where the trees are over mature.

CRYPTOMERIA SPP. Blight (Phomopsis sp.) caused marked injury to C. japonica in several Long Island Nurseries. It can be controlled by sanitation and Bordeaux. Leaf spot (Pestalozzia funerea) was noted on C. lobbii in New Jersey.

LARIX LARICINA. AMERICAN LARCH. Root rot caused by Polyporus schweinitzii was found in a swamp near Minneapolis, Minnesota. Seventy-five per cent of the trees were infected and severely rotted.

PICEA SPP. SPRUCE. Canker caused by Cytospora sp. was reported from Ohio, on Koster's blue spruce (P. pungens kosteri) from Massachusetts and New York, and on Norway spruce (P. excelsa) from New Jersey. In New York it is becoming more prevalent and serious each year, especially in the southern part of the State. A canker of blue spruce, cause undetermined, was also reported from Connecticut. Needle rust (Chrysomyxa cassandrae) was reported on P. mariana from Wisconsin. Chrysomyxa sp. was found, principally in or around the margins of swamps, on P. mariana and P. canadensis in Minnesota. Root rot caused by Polyporus schweinitzii occurs on P. mariana in Minnesota, especially on trees along drainage ditches where growth conditions have been changed considerably. Also reported from Minnesota were witches' broom of P. mariana due to Razoumofskya pusilla which is found wherever the host grows in the northern part of the State, and heart rot of P. mariana and P. canadensis caused by Trametes pini which occurs in all mature and overmature stands in northern Minnesota.

PINUS SPP. PINE. Rusts. Coleosporium ipomoeae was reported from Mississippi. C. solidaginis was reported from New Jersey, from Minnesota on P. banksiana, and from Connecticut on P. resinosa. Severe infection with C. vernoniae (C. carneum) occurred on several trees of P. nigra in an ornamental planting in Cincinnati, Ohio. Western gall rust, *Cronartium coleosporioides* (*C. harknessii*), was reported on *P. ponderosa* from Washington. *C. comandrae*, *C. comptoniae*, and *C. quercuum* were reported on *P. banksiana* from Minnesota, the last-named species also on the same host from Wisconsin, and on *P. rigida* from Connecticut. For *Cronartium ribicola* see p. 70.

Cankers. *Atropellis pinicola* was very common in northeastern Georgia, according to J. H. Miller, on *P. echinata*, *P. taeda*, *P. virginiana*. Curtis May reported it from Ohio on *P. sylvestris*, and stated that cankers, mostly young, had also been found on native pines. Mr. J. D. Diller found pine canker to be widespread from Virginia to Florida, occurring on *Pinus echinata*, *P. resinosa*, *P. taeda*, *P. virginiana*, *P. rigida*, *P. sylvestris*, *P. pungens*, *P. austriaca*, and *P. densiflora* in Virginia; on *P. echinata*, *P. taeda*, *P. virginiana*, *P. sylvestris*, *P. austriaca*, *P. rigida*, *P. densiflora*, and *P. pinaster* in North Carolina; and *P. echinata*, *P. taeda* and *P. virginiana* in Georgia; on *P. echinata*, *P. virginiana*, and *P. taeda* in Tennessee; and on *P. caribaea*, *P. clausa* and *P. pináster* in Florida. F. C. Strong reported that *Dasyscypha fuscosanguinea* occurs in the Keeweenaw Peninsula of the Upper Peninsula of Michigan, where it has spread somewhat and appears to be aggressive.

Tip blight, die back. *Sphaeropsis ellissii* was reported from New Jersey. *S. malorum* and winter injury or drought affected *P. nigra* in Connecticut.

Root rots caused by *Armillaria mellea* and *Polyporus schweinitzii* were reported from Minnesota, both affecting *P. banksiana*, *P. resinosa*, and *P. strobus*. Mature and overmature stands of *P. resinosa* are suffering considerable damage from Armillaria in the northern part of the State. As with other hosts, drought-weakened trees are attacked most severely.

Heart rot due to *Trametes pini* was reported from Connecticut on a living tree of *P. strobus*, and from Minnesota on *P. banksiana*, *P. resinosa*, and *P. strobus*.

Sooty mold (*Capnodium pini*) was reported on *P. strobus* from Connecticut. Leaf cast (*Lophodermium pinastri*) causes considerable defoliation and growth retardation of introduced western pines in Ohio. *P. Murrayana*, the lodgepole pine, was mentioned as susceptible. The disease was also reported from New Jersey. Leaf spot (*Septoria acicola*) was very severe on *P. sylvestris* in one Ohio nursery. *P. murrayana* and *P. nigra poiretiana* were also said to be susceptible in Ohio. The non-parasitic needle blight of *P. strobus* was reported only from Connecticut, although it probably occurred in other States.

SEEDLING DISEASE. *Thelephora laciniata* was reported on conifer seedlings in Ohio.

THUJA SPP. ARBORVITAE. Root rot (*Armillaria mellea*) was reported from Mississippi.

TSUGA CANADENSIS. CANADA HEMLOCK. The rusts *Melampsora abietis-canadensis* and *Pucciniastrum myrtilli* (*Peridermium peckii*) were reported from Connecticut.

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DISEASES OF ORNAMENTALS

ROOT AND CROWN ROT (*Sclerotium*, reported as *S. delphinii*, except where noted otherwise), was reported on numerous hosts as follows:

ACONITUM SP., Connecticut.

A. NAPELLUS, New Jersey.

AJUGA REPTANS, New Jersey.

ANEMONE CHINENSIS, Massachusetts.

ANTIRRHINUM MAJUS, Texas (*S. rolfsii*).

AQUILEGIA SP., Delaware.

CALENDULA SP., Texas (*S. rolfsii*).

CAMPANULA MEDIUM, New Jersey.

DAHLIA VARIABILIS, New Jersey.

DELPHINIUM SPP., Connecticut, New Jersey, New York, North Carolina (*Sclerotium* sp.), Texas (*S. rolfsii*), Arkansas (*Sclerotium* sp.), Michigan, (*Sclerotium* sp.), Missouri.

EUPATORIUM SP., New Jersey.

IRIS SPP., Missouri (both *S. delphinii* and *S. rolfsii*).

I. CRISTATA, Connecticut.

I. SIBIRICA, Massachusetts.

LILIUM SPP., Mississippi (*S. rolfsii*)

LOBELIA SP., New Jersey.

PENTSTEMON SP., Massachusetts.

PENTSTEMON BARBATUS (*Chelone barbata*), New Jersey.

PHLOX SPP., New Jersey.

RUDBECKIA, New Jersey.

STEVIA SP., New Jersey.

TULIPA SPP., Connecticut.

VERONICA FILIFORMIS, Connecticut.

V. REPENS, New Jersey.

ROOT KNOT (*Heterodera marioni*) was reported on the following hosts:

ABELIA, Mississippi.

ALTHAEA ROSEA, Texas.

ANTIRRHINUM MAJUS, Texas.

BEGONIA SPP., Connecticut, Texas, Missouri.

BROWALLIA VISCOSA, District of Columbia.

CASSIA ARTEMESIOIDES, Texas.

CLEMATIS SP., New Jersey.

CONVOLVULUS JAPONICUS, District of Columbia.

CUPHEA PLATYCENTRA, District of Columbia.

CYDONIA JAPONICA, Texas.

DAHLIA, Mississippi.

DELPHINIUM ELATUM hybrid, Virginia.

GARDENIA FLORIDA, New Jersey.

GLADIOLUS, becoming a serious menace in eastern North Carolina.

IRESINE LINDENI, District of Columbia.

IRIS TINGITANA var. Wedgewood, North Carolina.

LATHYRUS ODORATUS, Texas.

LIGUSTRUM SP., Mississippi.

PAEONIA, New Jersey, Mississippi, increasing in commercial plantings in Michigan, Wisconsin, 3 per cent loss in Missouri.

PERISTROPHE ANGUSTIFOLIA, District of Columbia.

PHLOX DRUMMONDI, District of Columbia

ROSA SPP., Texas

SANSEVIERIA ZEYLANICA LAURENTII, Florida.

SOLANUM CAPSICASTRUM, District of Columbia.

TORENIA FOURNIERI, District of Columbia.

TRADESCANTIA FLUMINENSIS, Texas.

VERBENA LUMINOSA, District of Columbia.

VIBURNUM SP., Mississippi.

WEIGELA SP., Mississippi.

AGERATUM. Rust (*Puccinia conoclinii*), Mississippi.

ALTHAEA ROSEA. HOLLYHOCK. Bacterial soft rot of roots and stems, West Virginia. Leaf spot (*Cercospora althaeina*), Connecticut. Anthracnose (*Colletotrichum* sp.),New Jersey. Leaf spot (*Phyllosticta althaeina*), New Jersey. Root rot (*Phymatotrichum omnivorum*), Texas. Rust (*Puccinia heterospora*), Texas. Rust (*Puccinia malvacearum*)was widely reported as usual. It was said to be severe in Massachusetts and Virginia. In Michigan, according to Nelson, there was much less rust in 1933 than there had been for the past 5 years.

AMELANCHIER SP. JUNEBERRY. Blight (*Bacillus amylovorus*),North Dakota.

AMPELOPSIS SP. Leaf spot (*Cercospora* sp.), New Jersey.

AMPELOPSIS QUINQUEFOLIA. VIRGINIA CREEPER. Dieback (*Cladosporium* sp.) New Jersey. Leaf spot (*Guignardia bidwellii*) Wisconsin, on *A. quinquefolia engelmanni*.

AMPELOPSIS TRICUSPIDATA. JAPANESE CREEPER. Leaf spot (*Guignardia bidwellii*) was more common than usual in New York. It was also reported from New Jersey.

AMYGDALUS SP. FLORWERING PEACH. Leaf curl (*Exoascus deformans*) Mississippi. Brown rot (*Sclerotinia sp.*), New York.

ANEMONE SPP. Crown rot (*Botrytis, cinerea* type), Pennsylvania. Leaf spot (*Gloeosporium* sp.) New York.

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ANTIRRHINUM MAJUS. SNAPDRAGON. Anthracnose (Colletotrichum antirrhini) was found in one garden in Baton Rouge, Louisiana, and was reported from four counties in Missouri. Stem rot (Phyllosticta antirrhini) was common as usual in greenhouses in Massachusetts but caused little damage. Root rot (Phymatotrichum omnivorum), Texas. Rust (Puccinia antirrhini) was reported from New England, New York, New Jersey, Alabama, Texas, Michigan, Wisconsin, Minnesota, Missouri, and Kansas. Losses estimated were 1 per cent in Massachusetts and 2 per cent in Texas and Missouri. Nelson in Michigan reported that summer night temperatures were above normal and the disease did not increase until late September. Verticillium wilt was reported from Maine to New Jersey. The species was said to be Verticillium alboatrum in Massachusetts and Connecticut and V. dahliae in New Jersey. In Massachusetts wilt occurred in most outdoor plantings and caused damage to some greenhouse crops, resulting in a loss of 2 per cent. In the two cases observed in New York the disease caused very serious losses.

AQUILEGIA SPP. COLUMBINE. Powdery mildew (Erysiphe polygoni), heavy infection late in the season in one locality in Minnesota. Stem rot (Sclerotinia sclerotiorum), abundant in Ohio.

ASPARAGUS PLUMOSUS. FERN ASPARAGUS. Blight (Ascochytula asparagina), Texas. Blight (fungi and weather) Florida.

ASPIDISTRA LURIDA. A disease showing many of the characteristics of ring spot was reported from New Jersey.

ASPLENIUM NIDUS. BIRDS NEST FERN. Nematode (Aphelenchoides fragariae /Aphelenchus olesistus/), New Jersey.

AUCUBA JAPONICA **AUREA**. Black leaf (Gloeosporium sp.), New Jersey.

AZALEA SPP. Mold (Botrytis sp., cinerea type), New Jersey, on A. pontica in greenhouse. Gall (Exobasidium oxycocci), New Jersey, on A. indica. Leaf gall (Exobasidium vaccinii), Mississippi. Wilt (Fusarium sp. isolated from discolored vascular system), New Jersey. Powdery mildew (Microsphaera alni), New Jersey. Phoma sp., Texas. Rust (Pucciniastrum sp.), New Jersey. Rust (Pucciniastrum myrtilli), Connecticut on A.viscosa. Leaf scorch (Septoria azaleae), New Jersey. Practically all the indica types are susceptible to this disease. Azalea hinodegiri and Azalea var. Mme. Petrick are very susceptible. Bud rot (Sporocybe azaleae), Massachusetts.

BEGONIA SPP. Nematode leaf spot (Aphelenchoides fragariae) was less prevalent than usual in New York. It usually causes much trouble on the varieties Lady Mac and Melior being grown for Christmas. It was also reported from New Jersey on the variety Melior, and from Pennsylvania. Blight (Botrytis sp.) was serious in one greenhouse in Missouri. Leaf spot (Cercospora sp.), New Jersey. Anthracnose (Gloeosporium sp.), Texas. Root rot (Rhizoctonia solani), New Jersey. Root rot (various organisms), Mississippi.

BERBERIS THUNBERGII. JAPANESE BARBERRY. Wilt (*Verticillium dahliae*), New Jersey.

BUXUS SPP. BOX. *Colletotrichum* sp., *Macrophoma candollei*, *Nectria* sp., *Phoma conidiogena*, *Phomopsis* sp., *Phytophthora parasitica*, *Verticillium buxi*, and *Volutella buxi* were reported from the District of Columbia on *B. sempervirens* and *B. suffruticosa*, and *Fusarium redolens*, *F. solani*, *F. semitectum majus* and *Nectria* (Nectriella) *rousseliana* on *B. sempervirens* (PDR 17:169-170).

BUXUS SEMPERVIRENS. COMMON BOX. (See also *Buxus* spp.). Leaf spot (*Macrophoma candollei*), Connecticut, New Jersey. Canker and blight (*Nectria rousseliana* /*Volutella buxi*/) is common in New York wherever the host is hardy and is apparently becoming more prevalent and serious. It was reported also from Connecticut, New Jersey, Maryland, and South Carolina. Leaf spot (*Phoma conidiogena*),New Jersey. Winter injury caused considerable damage in Virginia.

CACTUS. Root rot (*Fusarium* sp.), Mississippi. Charcoal spot (*Gloeosporium lunatum*), scorch (*Hendersonia opuntiae*), and root rot (*Phymatotrichum omnivorum*), were reported from Texas.

CALATHEA SANDERIANA (Maranta sanderiana). Leaf spot (*Phyllosticta* sp.), New Jersey.

CALCEOLARIA SP. Stem rot (*Sclerotinia sclerotiorum*), Washington, in greenhouse.

CALENDULA OFFICINALIS. Stem rot (*Rhizoctonia solani*) of greenhouse plants, New Jersey. Drop (*Sclerotinia sclerotiorum*), Texas. Yellows (virus), Maine, and New York.

CALLISTEPHUS CHINENSIS. CHINA ASTER. Rust (*Coleosporium solidaginis*)is very prevalent and serious in northern New York State, but is of no importance in the southern part. In 193 there was more than usual. Rust was also reported from New Jersey and Wisconsin.

Wilt (*Fusarium conglutinans callistephi*) was reported from Maine, New York, New Jersey, Mississippi, Ohio, Michigan, Wisconsin, Missouri, North Dakota, and Washington. The disease was local in occurrence in most States. In New York losses were rather severe with ordinary commercial varieties, but many florists obtained excellent results from wilt-resistant strains. Michigan reported more wilt than usual. It occurred in most plantings observed, the fungus being apparently introduced with the seed in most cases. In Wisconsin there was said to be much more than usual.

Stem canker (*Phomopsis callistephi*) was less prevalent than usual in Wisconsin. It is confined to asters grown under cloth shade. Stem rot (*Rhizoctonia solani*), New Jersey. Leaf spot (*Septoria callistephi*), Missouri.

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Yellows (Virus) was much more prevalent than usual in Massachusetts. Very few plants survived to produce blossoms. In New York many growers are using insect-proof cloth tents to control the disease. In Michigan it continues to be the most serious disease of asters. In 1933, although more prevalent than usual, it was not so severe as in 1932, apparently because leafhoppers were less abundant. Fewer asters are grown in Michigan now than five years ago because of the persistent seriousness of yellows. New York and Ohio reported the usual amount, and Wisconsin much less than usual. It was also reported from Maine and Connecticut.

CAMELLIA JAPONICA. CAMELLIA. Leaf spot, Pestalozzia sp., Virginia, South Carolina, in both cases probably followed frost injury. Pestalozzia guepini occurred in New Jersey and Mississippi. In New Jersey in one case this organism seemed to be the primary cause; in others it was associated with Gloeosporium sp. and Macrosporium sp.

CAMELLIA SASANQUA. SASANQUA TEA. Exobasidium monosporum, Alabama (P.D.R. 44).

CENTAUREA CYANUS. CORNFLOWER. Rust (Puccinia cyani), Connecticut, New Jersey, Pennsylvania.

CHRYSANTHEMUM SP. PYRETHRUM. Wilt (Rhizoctonia sp.), Puerto Rico.

CHRYSANTHEMUM HORTORUM. CHRYSANTHEMUM. Crown gall (Bacterium tumefaciens), Texas. Leaf spot (Cercospora sp.), Texas. Dodder (Cuscuta sp.) in two instances caused serious injury to out-of-doors plants in New York. The parasitized plants were severely stunted and sometimes killed. Powdery mildew (Erysiphe cichoracearum) was less prevalent in New York, both under glass and outdoors. It was also reported from New Jersey (as Oidium sp.). Wilt (Fusarium sp.), New Jersey. Root rot (Phymatotrichum omnivorum), Texas. Rhizoctonia (probably R. solani), Texas, Arizona. Leaf spot (Septoria chrysanthemella), New Jersey. Wilt (Verticillium dahliae) in two places in Washington. Yellows (virus), Mississippi.

CIBOTIUM SCHIEDEI. TREE FERN. Blight (Pestalozzia sp.), New Jersey.

CITRUS TAITENSIS. TAHITI ORANGE. Wither tip (Colletotrichum gloeosporioides), New Jersey.

CODIAEUM SPP. CROTON. Leaf spot (Gloeosporium crotonis), New Jersey. The varieties Pere Cheron and Rothschild are very susceptible.

COLEUS SPP. Bacterial leaf spot was reported from New Jersey.

CORDYLINE TERMINALIS. COMMON DRACAENA. Leaf spot (Phyllosticta maculicola), New Jersey. Root rot (Phytophthora sp.), New Jersey.

COREOPSIS SP. Stem rot (*Sclerotinia sclerotiorum*) was abundant on Coreopsis in Ohio and was reported from Washington on Calliopsis (*Coreopsis tinctoria*).

CORNUS FLORIDA. FLOWERING DOGWOOD. Leaf spot (*Phyllosticta* sp.) and twig blight (*Sphaeropsis* sp.), New Jersey.

COSMOS BIPINNATUS. COSMOS. Blight (*Phomopsis stewartii*)was less prevalent in Kansas than in moister seasons, although it was severe on some plants. Root rots (*Phymatotrichum omnivorum* and *Rhizoctonia* sp.), Texas. Mosaic (Virus), Texas.

COSMOS SULPHUREUS. YELLOW COSMOS. Root rot (*Phymatotrichum omnivorum*), Texas.

COTONEASTER SPP. Blight (*Bacillus amylovorus*), New Jersey, Texas (on *C. pannosa*), Ohio (on *C. divaricata* and *C. foveolata*), California. Twig blight (*Diplodia* sp.), Texas. Root rot (*Phymatotrichum omnivorum*), Texas, Arizona. Twig blight (*Sphaeropsis malorum*), New York, Texas.

CRASSULA FALCATA. Anthracnose (*Gloeosporium* sp.), New Jersey.

CYCLAMEN SPP. Bud rot (*Botrytis* sp.) was reported very troublesome by a grower of cyclamen seed in Michigan, according to Nelson. Blight (*Botrytis* sp., *cinerea* type) and stunt (*Cladosporium cyclaminis*), reported on *Cyclamen persicum* in New Jersey.

DAHLIA SPP. Leaf spot (*Alternaria* sp.), New Jersey. Bacterial wilt (*Bacterium solanacearum*), Mississippi. Storage rot (*Botrytis, cinerea* type), New Jersey. Leaf spot (*Cercospora* sp.), Mississippi. Powdery mildew, reported as *Erysiphe cichoracearum*, Connecticut; reported as *E. polygoni*, New Jersey, Missouri. Root rot (*Fusarium* sp.), New Hampshire. Root rot (*Phymatotrichum omnivorum*), Texas. Wilt(*Verticillium dahliae*) caused 0.5 per cent loss in Missouri. Mosaic (virus), New York, New Jersey, Wisconsin. Few commercial plantings in New York, if any, are free from mosaic. Stunt (virus), Virginia, 1 per cent loss in Missouri.

DELPHINIUM SPP. LARKSPUR. Bacterial leaf spot, black spot (*Bacterium delphinii*) was reported from Maine, Massachusetts (10 per cent loss estimated), Connecticut, New York (less prevalent than usual), New Jersey, Delaware (much more than usual), Pennsylvania, Wisconsin, and Minnesota. Blight, bud rot (*Botrytis* sp.), Massachusetts, Wisconsin. Root rot (*Corticium vagum*), Mississippi. Powdery mildew, Maine; reported as *Erysiphe cichoraccarum*, Minnesota; as *E. polygoni*, New Hampshire, New York. Root rot (*Phymatotrichum omnivorum*), Texas. Root rot (Rhizoctonia and Fusarium), Massachusetts, very prevalent. Stem rot (*Sclerotinia sclerotiorum* and *Sclerotium* sp.) was more prevalent than usual in Michigan, the increase being attributed to excess precipitation in May. *Sclerotinia sclerotiorum* was abundant in Ohio also. Stunt or witches' broom (virus), Idaho (1932), Washington.

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DIANTHERA SP. WATER WILLOW. *Bagnisiella diantherae*, Texas.

DIANTHUS SP. PINK. Smut (*Ustilago violacea*), New Jersey.

DIANTHUS BARBATUS. SWEET WILLIAM. Stem rot (*Rhizoctonia* sp.) Connecticut.

DIANTHUS CARYOPHYLLUS. CARNATION. Leaf spot (*Alternaria* sp.), Missouri (of slight importance). Branch rot, leaf spot, crown rot (*Alternaria dianthi*): The leaf spot was reported from New Jersey. Branch rot was found in two greenhouses in Missouri for the first time in 1932, and occurred again in 1933. Crown rot was reported from Texas. Bacterial leaf spot (*Bacterium woodsii*), New Jersey, New York. In New York it occurs mostly on Long Island. With a few exceptions most commercial ranges were free from the disease in 1933. The varieties Matchless, Red Matchless, Scepter, and Potentate are very susceptible, according to C. Guterman. Bud blight (*Botrytis* sp.), New Jersey. Stem rot (*Corticium vagum*) was general but less prevalent than usual in New York. It is usually most serious just after the plants have been benched. The variety Matchless is very susceptible. In Missouri, where there was more than usual, a loss of 3 per cent was estimated, mostly in greenhouses. It was reported also from Kansas and Texas. Fairy ring (*Heterosporium echinulatum*), Washington, in two localities. Rust (*Uromyces caryophyllinus*) is widespread, but in 1933 it was reported only from Massachusetts, New Jersey, and Missouri. Two per cent loss was estimated in Missouri.

DICENTRA SPECTABILIS. BLEEDING HEART. Wilt (*Fusarium* sp.), New Jersey.

DIGITALIS PURPUREA. COMMON FOXGLOVE. Stem rot (*Rhizoctonia solani*), New Jersey.

DRACAENA FRAGRANS. DRACAENA. Tip blight (*Gloeosporium* sp.), New Jersey.

DUCHESNEA INDICA. MOCK STRAWBERRY. Rust (*Frommea obtusa duchesneae* /Frommea duchesneae, Kuehneola duchesneae/), Virginia.

ERYTHRINA ARBOREA. CORAL BEAN. Root rot (*Phymatotrichum omnivorum*), Texas.

EUGENIA APICULATA. SHORTLEAF EUGENIA. Brown rot (*Botrytis* sp., *cinerea* type), New Jersey.

EUONYMUS JAPONICUS. EVERGREEN BURNINGBUSH. Anthracnose (*Colletotrichum griseum*) and powdery mildew (*Microsphaera alni*) both reported from Mississippi.

EUPATORIUM SP. Stem rot (*Rhizoctonia solani*), New Jersey.

EUPHORBIA MARGINATA. SNOW-ON-THE-MOUNTAIN. Leaf spot (Phyllosticta sp.), New Jersey. Root rot (Phymatotrichum omnivorum), Texas.

FERNS. The slime mold Diachea leucopoda was fruiting on the lower portions of fronds in a greenhouse in New Jersey.

FICUS SPP. Gloeosporium elasticae on Ficus elastica, and Gloeosporium sp. on F. pandurata, New Jersey.

FREESIA SPP. Corm rot (Fusarium sp.), according to Freeman Weiss, occurs in greenhouses on Long Island, near Babylon, where it is increasing in importance. Leaf blight (Heterosporium sp.), Connecticut.

FUCHSIA SPP. Sooty mold (Fumago sp.), Washington.

GARDENIA FLORIDA. CAPE JASMINE. Canker (Myxosporium sp.?), New Jersey. Root rot (Phymatotrichum omnivorum), Texas. Cold injury, Mississippi.

GLADIOLUS. Bacterial blight (Bacterium gummisudans) was much more prevalent than usual in Minnesota. It caused as much as 30 per cent damage in the field on variety Betty Joy. In Missouri it was first found in 1932 in one planting; in 1933 it occurred in two plantings. Scab (Bacterium marginatum) was reported from Massachusetts, New York, New Jersey, Virginia, Florida, Mississippi, Texas, where it caused 10 per cent loss, Ohio, Michigan, Missouri, where a loss of 2 per cent was estimated, Kansas, and Washington. Corm rot (Fusarium sp.), Massachusetts, Mississippi, Wisconsin. Corm rot (Penicillium gladioli), Connecticut, New Jersey, Florida, Mississippi, Wisconsin, and Washington. Dry rot (Pythium sp.), Texas. Dry rot (Sclerotinia gladioli /Sclerotium gladioli/, New Jersey, Michigan, Missouri. Hard rot (Septoria gladioli), New Jersey, Mississippi, Wisconsin.

HEDERA HELIX. ENGLISH IVY. Bacterial leaf spot (Bacterium hederae), New Jersey.

HELICHRYSUM SPP. EVERLASTING. Yellows (Virus), several reports in New York.

HOWEA FORSTERIANA (Kentia forsteriana). FORSTER PALM. Leaf blight (Colletotrichum kentiae), New Jersey.

HYDRANGEA SPP. Leaf spot (Alternaria sp.), powdery mildew (Oidium sp.), and leaf spot (Phyllosticta hydrangeae) were reported from New Jersey.

HIBISCUS SYRIACA. SHRUB ALTHEA. Root rot (Phymatotrichum omnivorum), Texas.

IRIS SPP. Stem and bulb nematode (Anguillulina dipsaci) was found in North Carolina on the bulbous iris, Iris tingitana var. Wedgewood, associated with the root knot nematode. Bacterial leaf blight (Bacillus

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carotovorus?). There was only a trace of this leaf spotting in Massachusetts in 1933, according to Boyd, although it was not much drier in the spring than it was in 1932 when severe infection occurred in May, and although there was a considerable amount of typical bacterial soft rot in June. A bacterial leaf spot (undet.) was reported from Connecticut on *I. cristata*. Bacterial soft rot (*Bacillus carotovorus*) was reported as occurring in the usual amounts or less in Massachusetts, New York on German Iris, New Jersey, Pennsylvania, Mississippi, and Wisconsin. A bacterial decay following winter injury was reported from Washington.

Leaf spot (*Didymellina iridis*, *D. macrospora* [*Heterosporium gracile*]) was reported, mostly as of the usual prevalence or less, in Massachusetts, Connecticut (on *Iris* sp. and German iris), New York (on German iris), New Jersey, Virginia, Texas, Arkansas, Wisconsin, Minnesota, Missouri, Kansas, and Washington (on German iris). In Virginia it was prevalent and caused injury to many plantings. In Arkansas it was said to be very prevalent and destructive, especially in May, probably due to excessive rainfall. In Missouri, although plentiful, it does not seem to cause any permanent damage. In New York it was less serious in spite of a generally wet spring.

Dry rot (*Fusarium* sp.), Texas. Flower spot (*Gloeosporium cingulatum*), District of Columbia. Ink disease (*Mystrosporium* sp.) occurred on bulbous iris on the Eastern Shore of Virginia.

Rust (*Puccinia iridis*) was found on the rhizomatous species *I. mariae* and *I. leichtlini* and the bulbous species *I. histrio*, *I. histrioides*, and *I. sindjarensis*, imported into California from Holland. The native rhizomatous species, *I. hexagona*, was found infected in South Carolina. Commercial varieties of bulbous iris found infected include Golden King and White Excelsior in California, Anton Mauve, Hart Nibrig, and King of the Whites in Louisiana, and D. Haring, Leonardo de Vinci, and White Excelsior in North Carolina (this data on rust from Bureau Plant Quarantine News Letter, No. 30, p. 5, June, 1933). Rust was also reported from Missouri.

KALMIA SPP. KALMIA, MOUNTAIN LAUREL. On *Kalmia* sp.: Leaf spot (*Septoria kalmicola*), Virginia. On *K. latifolia*: Leaf spot (*Cercospora kalmiae*), Connecticut. Blight (*Phomopsis kalmiae*), New Jersey. Leaf spot (*Phyllosticta kalmicola*), Long Island, New Jersey, Pennsylvania.

KERRIA JAPONICA. KERRIA. Blight (*Coccomyces kerriae*), was so serious in a garden in Virginia as to necessitate cutting out of the plants. Leaf spot (*Septoria* sp.?), New Jersey.

LABURNUM VULGARE. GOLDENCHAIN. *Fusicoccum kunzeanum* (*Diaporthe kunzeanum*), Massachusetts.

LATHYRUS ODORATUS. SWEET PEA. Leaf spot (*Alternaria* sp.), New Jersey, Texas. Streak (*Bacillus lathyri*), Texas. Root rot (*Corticium vagum*, *Rhizoctonia* sp.), Mississippi, Texas, North Dakota, Washington. Wilt

(*Fusarium* sp.), New Jersey. Powdery mildew, cause not given, Maine; *Microsphaera alni*, New Jersey. Leaf spot (*Ramularia* sp.) was serious in one greenhouse in New York where it caused premature defoliation. The spots are irregular and gray brown, and the fungus fruits on both surfaces of the leaf. Root rots (various), Maine. Black root rot (*Thielavia basicola*) was reported once in Connecticut. In New York it caused severe damage in one greenhouse and a few cases were reported in out-of-doors plantings. Mosaic (virus) occurred in a few plantings in New York. In one greenhouse it was serious and caused marked stunting. Other States from which mosaic was reported are Maine, New Jersey, and Kansas.

LEUCOTHOE CATESBAEI. DROOPING LEUCOTHOE. Leaf spots due to *Cercospora kalmiae* and *Cryptostictus* sp. were reported from New Jersey.

LIATRIS SP. GAYFEATHER. Wilt caused by *Verticillium dahliae* was reported from New Jersey.

LIGUSTRUM SPP. PRIVET. Leaf spot (*Cercospora* sp.) Delaware, on *L. vulgare*. Leaf spot (*Cercospora ligustri*), Texas. Dodder (*Cuscuta* sp.) Texas. Anthracnose and blight (*Glomerella cingulata*) was reported from New York on *L. vulgare*. It is said to be decreasing in importance each year, due to the use of other, immune, varieties. Also in Texas. Root rot (*Phymatotrichum omnivorum*), Texas, Arizona.

LILIUM SPP. LILY. Stem rot (*Botrytis* sp. and *Phytophthora cactorum*) was more prevalent than usual in Wisconsin, perhaps due to wet weather in May. The Regal lily was said to be susceptible. Blight (*Botrytis elliptica*) was reported from New York, New Jersey, Michigan, and Oregon. In Oregon, due to cold wet weather during spring and early summer, it was so severe that some usually resistant kinds were attacked. In Michigan, on the other hand, some very susceptible kinds like *L. candidum* and *L. testaceum* were not affected because of very unfavorable temperatures. *L. candidum*, Madonna lily, and *L. regale*, the Regal lily, were mentioned as susceptible in New Jersey. Bulb rot (*Fusarium* sp., and *Bacillus carotovorus*) was very severe in gardens in Massachusetts. The Madonna lily was said to be susceptible. "Limber neck" (nonparasitic), Mississippi. Mosaic (virus) was serious in some species in Michigan and was also reported from Wisconsin.

LILIUM CANDIDUM. MADONNA LILY. Leaf mold (*Botrytis* sp.), Connecticut. Leaf scorch (high temperatures) caused serious damage in all parts of Michigan. The injury occurred during a period of very high temperatures in June. Stem rot (*Rhizoctonia solani*), Connecticut. Mosaic (virus), New Jersey. Yellow flat (virus), New Jersey, Pennsylvania.

LILIUM LONGIFLORUM. EASTER LILY. Blight (*Botrytis elliptica*), Florida. Mosaic (virus), Connecticut, Florida. Yellow flat (virus), New Jersey.

LILIUM SPECIOSUM. Mosaic (virus), New Jersey.

LUPINUS SPP. LUPINE. Ring spot (virus), Washington.

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MAGNOLIA SPP. MAGNOLIA. Leaf spots (Alternaria sp. following mechanical injury, Heterosporium magnoliae and Pestalozzia guepini), Texas.

MAHONIA AQUIFOLIUM. OREGON HOLLYGRAPE. Leaf spot (Phyllosticta sp.), New Jersey.

MALUS SPP. FLOWERING CRAB. Gymnosporangium juniperi-virginianae was reported from Connecticut on Malus ioensis, from New York where it was rather severe on many susceptible ornamentals, from New Jersey on M. floribunda, and from Mississippi.

MATTHIOLA SPP. STOCK. Stem rot (Rhizoctonia solani), New Jersey, on M. incana. Root rot (Phymatotrichum omnivorum), Texas. A rather serious wilt, from which Verticillium sp. was isolated, was found twice in New York, in a garden and also under glass.

MIRABILIS JALAPA. FOUR O'CLOCK. Root rot (Phymatotrichum omnivorum), Texas.

MONARDA SPP. BEEBALM, BERGAMOT. Rust (Puccinia menthae) was reported from Connecticut, on M. didyma, M. didyma splendens, M. kalmiana, and M. ramaleyi.

NARCISSUS SPP. Stem and bulb nematode (Anguillulina dipsaci) was reported from New Hampshire, New Jersey, Michigan, Missouri, and California. In Michigan, according to Nelson, more specimens were sent in by State inspectors than in any previous season. In Missouri it was serious in one commercial planting. The Chinese sacred lily, Narcissus tazetta orientalis, usually seems to be immune but in a number of cases in San Diego, California, it was found to be infested (according to Bureau of Plant Quarantine News Letter, No. 29, p. 8, May, 1933). The nematode Aphelenchoides fragariae was found in two lots from North Carolina, (Bureau Plant Quarantine News Letter, No. 30, p. 5, June 1933). Basal rot (Fusarium sp.) was reported from New York, Florida, Mississippi, Wisconsin, and Missouri. A loss of 2 per cent was estimated in Missouri. On Long Island the Barrii and Leedsii varieties are said to be resistant, while Victoria, Emperor, and Eureka are very susceptible. Leaf scorch (Stagonospora curtisii) caused a loss of 20 per cent in some Long Island plantings. Varieties belonging to the large trumpet group are resistant to this disease, while the Barrii, and Jonquilla groups, etc., are very susceptible. Mosaic (virus), also known as gray disease, caused losses of as much as 30 per cent in some plantings on Long Island. It was reported from New Jersey, and from Missouri where the loss was estimated at 1 per cent.

NEMESIA SP. A bacterial leaf spot was reported from New Jersey.

NERINE SPP. Leaf scorch (Stagonospora curtisii)was found on badly diseased leaves of N. flexuosa alba, N. plantii, and the horticultural varieties Her Majesty and Robert Berkeley, from California. (Bureau

Plant Quarantine News Letter, No. 30, p. 5, June 1933).

NERIUM OLEANDER. OLEANDER. Root rot (*Phymatotrichum omnivorum*), Texas.

PACHYSANDRA TERMINALIS. JAPANESE PACHYSANDRA. *Volutella* sp. was reported on this host from Connecticut.

PAEONIA SPP. PEONY. Blight (*Botrytis paeoniae*) was reported from Massachusetts, Connecticut, New York, New Jersey, Mississippi, Ohio, Wisconsin, Minnesota, and Missouri. Blotch (*Cladosporium paeoniae*), New Jersey, Wisconsin, and Missouri. Crown elongation (undet.), Missouri. Crown rot (undet.), Kansas. Lemoine's disease (cause unknown) was observed on certain varieties in large commercial plantings in Michigan. Blight (*Phytophthora cactorum*) was reported from Wisconsin and Minnesota.

PELARGONIUM SPP. GERANIUM. Bacterial leaf spot (*Bacterium pelargoni*), and blight (*Botrytis, cinerea* type), were reported from New Jersey.

PETUNIA HYBRIDA. PETUNIA. Mosaic (virus), New Jersey, Kansas.

PHILADELPHUS SPP. MOCKORANGE. Rust (*Gymnosporangium speciosum*), Texas, on *P. microphyllus*.

PHLOX SPP. Stem nematode (*Anguillulina dipsaci*), New Jersey, and on *Phlox subulata* from the District of Columbia. Powdery mildew was reported from Maine and Texas; as *Erysiphe cichoracearum* from Connecticut, New York (rather general and serious), and New Jersey; and *E. polygoni* (E. communis) from Minnesota. Leaf spot (*Septoria phlogis*), on *Phlox divaricata* from New Jersey. Leaf spot and leaf wilt (undet.) Kansas.

PHOENIX CANARIENSIS. CANARY DATE PALM. Smut (*Graphiola phoenicis*), Pennsylvania.

PIERIS FLORIBUNDA. MOUNTAIN ANDROMEDA. Dieback (*Phytophthora* sp.), Pennsylvania.

PITTOSPORUM SPP. Leaf spot (*Cercospora* sp.), South Carolina, Texas. In South Carolina it apparently followed insect punctures.

POINSETTIA SPP. POINSETTIA. Root rot (*Phymatotrichum omnivorum*) and Rust (*Uromyces proeminens*), Texas.

POLEMONIUM REPTANS. CREEPING POLEMONIUM. Leaf spot (*Septoria polemonii*), Connecticut.

PYRACANTHA SPP. FIRETHORN. Scab (*Fusicladium pyrinum* var. *pyracanthae*) was reported on *P. coccinea* in Connecticut and on *P. lalandi* in the District of Columbia. Scab (*Venturia* sp.) was reported on *P. coccinea* from Washington.

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RHODODENDRON SPP. RHODODENDRON. (See also Azalea). Leaf spot (Cercospora rhododendri), on R. ponticum in New Jersey. Anthracnose (Colletotrichum philodendri), on R. giganteum in New Jersey. Gall (Exobasidium sp.), Pennsylvania. Leaf mold and witches' broom (Exobasidium sp.), New Jersey. R. P. White remarks that there are three distinct species of Exobasidium on Rhododendron. This one forms a white felt of spores on the lower surfaces of the leaves, and the leaves turn yellow. A witches' broom is formed. Red leaf spot, yellow blight (Exobasidium vaccinii), Connecticut, on R. medicaulis, New Jersey. Leaf spot (Pestalozzia macrotricha), New Jersey. Canker (Phomopsis sp.), New Jersey, Pennsylvania, New York. Leaf spot (Phomopsis spp.), Connecticut. Leaf spot (Phyllosticta spp.), New Jersey. Leaf spot (Phyllosticta maxima) on R. carolinianum in Connecticut. Blight (Phytophthora cactorum), New Jersey. Wilt (Phytophthora cinnamomi), on R. ponticum in New Jersey. Root rot (Phytophthora cryptogea?), New Jersey, also isolated from a plant from Pennsylvania, according to R. P. White. Rust (Pucciniastrum myrtilli), on R. lutescens in Connecticut, on R. ponticum in New Jersey. Die back (Sphaeropsis sp.) on R. maximum in New Jersey, also determined by R. P. White on the same species from Pennsylvania.

RHUS COTINUS. COMMON SMOKETREE. Wilt (Verticillium dahliae), New Jersey.

ROSA SPP. ROSE. Cankers. Coniothyrium and other fungi caused cankers in Florida. The occurrence of dead or cankered canes is apparently correlated with defoliation from black spot and with wounds made by pruning and blossom removal (W. B. Shippy). Limb canker (Coniothyrium rosarum) was reported from Texas. Canker due to Coryneum sp. was common in the Hood River Valley of Oregon, probably due to the severity of the preceding winter, according to J. R. Kienholz. Crown canker (Cylindrosporium scoparium) was reported from New Jersey. Brown canker caused by Diaporthe umbrina was reported from Massachusetts and New Jersey. Diplodia sp. was a cause of canker in Texas. Cane blight or canker due to Leptosphaeria coniothyrium (Coniothyrium fuckelii) caused losses estimated at 3 per cent in Massachusetts, 2 per cent in Texas, and 0.5 per cent in Missouri and was reported also from New Jersey and Mississippi. A die back and stem girdle of unknown cause was observed on hybrid teas and certain climbers in Arkansas.

Black spot (Diplocarpon rosae) was generally reported as an important disease, in most cases as of average prevalence. Delaware reported much more and Oregon more than usual, while Michigan, Missouri, and Kansas reported less. Losses estimated were 5 per cent in Texas, 1 per cent in Massachusetts, and 0.5 per cent in Missouri. In New York the disease was said to be serious, particularly on hybrid teas and perpetuals. In Wisconsin R. rugosa and its hybrids were resistant, while the Pernetiana varieties were susceptible. Copper fungicides, especially Bordeaux mixture, have been effective in control experiments in Florida.

Powdery mildew. Sphaerotheca humuli was reported from Washington. S.

pannosa was widespread, as usual. New Jersey was the only State reporting more than the average prevalence, while Connecticut, Arkansas, Michigan, Wisconsin, Missouri, and Kansas reported less. In Michigan the disease was said to be less prevalent than for several years. In other States reporting it occurred in the usual amounts. Massachusetts reported 5 per cent loss, Texas and Missouri 2 per cent.

Other diseases. Root rot (*Armillaria mellea*), Texas. A bacterial leaf spot was reported from one locality in New Jersey and one in New York, but has been seen in no other house (R. P. White). Crown gall (*Bacterium tumefaciens*) was reported from Connecticut, Texas, Arkansas, Wisconsin, Missouri, and Kansas. Bud blight (*Botrytis* sp., *cinerea* type), New Jersey, Texas. Leaf spot (*Cercospora rosicola*), Mississippi, Puerto Rico. Chlorosis due to excess of lime, Texas. Anthracnose (*Gloeosporium rosae*), Texas. *Phomopsis* sp. was reported on *R. rugosa* from Connecticut. Rusts were reported as follows: *Phragmidium* spp. from Maine and Wisconsin, *P. speciosum* from Washington, and *P. subcorticinum* (P. rosae-pimpinellifoliae) from Connecticut, Texas, and Indiana. Leaf spot (*Phyllosticta* sp.), New Jersey. Root rot (*Phymatotrichum omnivorum*) caused 6 per cent loss in Texas. Leaf spot (*Septoria* sp.), New Jersey. Anthracnose (*Sphaceloma rosarum*), Maryland, Virginia. Mosaic (virus) New Jersey.

ROSMARINUS OFFICINALIS. ROSEMARY. Root rot (*Phymatotrichum omnivorum*), Arizona.

SCUTELLARIA SPP. SKULLCAP. Stem rot (*Botrytis* sp.), Washington.

SPIRAEA SPP. SPIREA. Bacterial leaf spot on Vanhoutte spirea, New Jersey. Chlorosis or variegation, Washington. Powdery mildew (*Podosphaera oxyacanthae*), Connecticut. Root rot (*Phymatotrichum omnivorum*), Texas.

SYMPHORICARPOS SPP. SNOWBERRY. Anthracnose (*Glomerella cingulata*) was much more prevalent than usual in Massachusetts, due perhaps to late rains and warm weather. It was also reported from Wisconsin. Powdery mildew (*Microsphaera* sp.), New Jersey. Anthracnose (*Sphaceloma symphoricarpi*), on *S. albus* var. *laevigatus*, Maryland.

SYRINGA SPP. LILAC. Bacterial blight (*Bacterium syringae*) was reported from Massachusetts, Connecticut, Alabama, Illinois, and Michigan. Excessive moisture in May favored the disease in Michigan and very general and heavy infection was observed on many varieties in commercial plantings where no attempt had been made to control it last year. The report from Alabama is apparently the first for that State. Leaf spot (*Cercospora lilacis*), Mississippi. Anthracnose (*Gloeosporium syringae*), Connecticut, new to the State. Graft canker (undet., possibly due to incompatibility between stock and scion), Tennessee. Powdery mildew (*Microsphaera alni*), Massachusetts, Connecticut, New Jersey, Texas, Wisconsin, Missouri, and Kansas. Massachusetts reported the least seen in years. In Wisconsin infection occurred later than usual due to lack of moisture. Leaf spot (*Phoma* sp.), Wisconsin. Root rot (*Phymatotrichum omnivorum*), Texas. Blight (*Phytophthora cactorum*), New Jersey. Winter injury was reported

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from Washington and frost injury from New Jersey.

TRACHYMENE CAERULEA. BLUE LACEFLOWER. Stem rot (Rhizoctonia solani), 100 per cent infection in one place in New Jersey.

TROPAEOLUM MAJUS. NASTURTIUM. Wilt (*Bacterium solanacearum?*), New Jersey.

TULIPA SPP. TULIP. Tulip fire, Botrytis blight (*Botrytis tulipae*) was reported from Massachusetts, Connecticut, New York, New Jersey, Virginia, Ohio, Michigan, Wisconsin, Missouri, and Washington. In almost every case it was said to be unusually destructive. In Massachusetts and Connecticut it was more severe than it had ever been observed to be previously. In Michigan practically all plantings more than two years old were seriously affected. According to Nelson the best control of this disease is obtained by replanting the bulbs annually in new locations. In Wisconsin it was especially severe in shady locations, according to Vaughan, who thought that the disease might be due, in part, to *Phytophthora cactorum*. Blue mold (*Penicillium* sp.), Washington. Gray bulb rot (*Rhizoctonia tuliparum*) was severe on one lot of bulbs for forcing imported into New Jersey from Holland.

VIOLA SPP. VIOLET. Leaf spots. *Alternaria* sp., Texas. *Cercospora granuliformis*, Virginia, on *V. papilionacea*. *Cercospora violae*, common late in the season in Georgia. *Septoria hyalina*, on *V. primulifolia* in South Carolina. An undetermined leaf spot was very severe in one garden in Kansas. Rust (*Puccinia violae*), Connecticut, on *Viola* sp. and *V. odorata*. Scab (*Sphaceloma violae*) has been reported from New York, New Jersey, Pennsylvania, South Carolina, Georgia, and Florida.

VIOLA TRICOLOR. PANSY. Leaf spot (*Alternaria* sp.) and anthracnose (*Colletotrichum violae-tricoloris*) were reported from New Jersey.

WEIGELA SPP. WEIGELA. Root rot (*Phymatotrichum omnivorum*) on *W. rosea*, Texas. Leaf spot (*Ramularia diervillae*) in one nursery in Tennessee, 75 per cent infection occurred on leaves of the variety Henderson.

WISTERIA SPP. WISTERIA. Leaf spot (*Phyllosticta* sp.), New Jersey. *Tubercularia vulgaris*, Connecticut.

YUCCA SPP. YUCCA. Leaf spot (*Cercospora concentrica*), Texas. Leaf spot (*Coniothyrium concentricum*), New Jersey on *Y. filamentosa*, Washington. Leaf spot (*Epicoccum asterinum*), Texas on *Y. filamentosa*. Leaf spot (*Kellermannia yuccaegena*) on special permit material grown in California (Bureau Plant Quarantine News Letter, No. 30, p. 5, June 1933). Leaf blight (*Neottiospora yuccaefolia*), Washington.

ZANTEDESCHIA AETHIOPICA. COMMON CALLA. Crown rot (*Bacillus aroideae*) was reported from New York where it is becoming less troublesome due to the more general practice of corm disinfection before planting, and from New Jersey. A disease reported as mosaic, possibly due to a virus, occurred in Washington. Another virus disease, spotted wilt, was reported from Indiana by R. W. Sampson, as follows: "Three diseased plants were collected in a greenhouse at Hobart. Inoculations made to tomato, jimson weed, and tobacco, resulted in symptoms very similar to those described for spotted wilt by Samuel in Australia."

ZINNIA ELEGANS. COMMON ZINNIA. Leaf blight (Alternaria sp.), New Jersey. Leaf spot (Cercospora atricincta), Texas. Powdery mildew (Erysiphe cichoracearum), Connecticut, New Jersey, Texas, Minnesota, North Dakota, and Kansas. Root rot (Rhizoctonia sp.) and charcoal stem rot (Rhizoctonia bataticola), Texas. Mosaic (virus), Kansas.

DISEASES OF MISCELLANEOUS PLANTS

DYING OR WASTING DISEASE OF EEL-GRASS. The disappearance of the eel-grass, Zostera marina, along the Atlantic Coast of both North America and Europe, constitutes a problem of exceptional interest, whether it is finally found to be due to the effects of some change in environment or to the attack of a parasite, or to both acting together. In itself the plant is important to only a limited extent, but indirectly it is of very great importance. It is a source of food for sea-fowl, especially the brant. Its thick growth offers hiding-places for young fish, and also protects the shore-line from washing in many places. Clarence Cottam of the U. S. Biological Survey has discussed the disease fully in the Plant Disease Reporter, Vol. 17, pp. 46-53, 119-120, 142-143.

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Prepared by Nellie W. Nance

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THE PLANT DISEASE REPORTER

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Supplement 87

Crop Losses from Plant Diseases in the United States

1931, 1932, and 1933

June 15, 1935

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

ESTIMATES OF CROP LOSSES FROM DISEASES IN THE UNITED STATES - 1931, 1932, and 1933

Compiled by

Jessie I. Wood

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FOREWORD

These estimates of crop losses for the years 1931, 1932, and 1933 have been computed and are presented in the same way as in previous years (see Plant Dis. Reptr. Suppl. 83, 1932).

The figures included in these summaries are, in most cases, based on observation only, and are not the results of actual counts; they should be thought of, therefore, as indicating probable losses. In the few cases, however, where it has been possible to compare these estimates with figures from wholly independent sources, they have appeared to be highly significant (Stevens, Neil E. Some significant estimates of losses from plant diseases in the United States. Phytopath. 23:975-984. 1933; and Stevens, Neil E., and Jessie I. Wood. Losses from corn ear rots in the United States. Phytopath. 25: 281-283. Feb. 1935).

In general, it is probable that the estimates are too low. This has been proved to be decidedly so in the case of wheat leaf rust. Caldwell et al. have investigated the "Effect of leaf rust (Puccinia triticina) on yield, physical characters, and composition of winter wheats" (Caldwell, R. M., H. R. Kraybill, J. T. Sullivan, and Leroy E. Compton, Jour. Agr. Res. 48: 1049-1071. Abst. in Phytopath. 22: 5. 1932). They found that there was a marked reduction in yield of heavily rusted plots of susceptible varieties from that of control plots (sulfur-dusted). About three-fourths of the loss was due to the reduction in number of kernels per head, the remainder to reduction in weight of the kernels. Most of the commercial winter wheat varieties, they say, are very susceptible. They conclude that leaf rust is a very important factor affecting the yield of winter wheats in the United States. The results of studies like this have not been reflected adequately in these estimates.

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1931 - WHEAT

Estimated reduction in yield of wheat due to diseases, 1931

State	Production: 1,000 Bushels	Estimated reduction in yield of wheat due to diseases													
		Scab		Leaf Rust		Stem Rust		Stinking Smut		Loose Smut		Foot Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vt.	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Y.	5,311	0	0	2.	113	t	-	t	-	1.	57	2.	113	6.	340
N. J.	1,323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	19,987	-	-	20.	4,997	-	-	-	-	-	-	-	-	20.	4,997
Ohio	50,744	1.	546	1.5	818	2.	1,091	1.5	818	1.	546	-	-	7.0	3,819
Ind.	43,327	0.3	149	12.	5,962	0.5	248	t	-	t	-	0	0	12.8	6,359
Ill.	45,076	0.3	144	5.	2,405	0.2	96	0.5	241	0.3	144	0	0	6.3	3,030
Mich.	18,446	0.1	19	0.1	19	t	-	0.5	94	0.1	19	-	-	1.4	263
Wis.	1,544	0.2	3	0.1	2	t	-	1.	16	1.	16	t	-	2.5	40
Minn.	18,011	t	-	t	-	1.	191	1.5	286	1.	191	1.	191	5.5	1,050
Iowa	7,594	1.	78	t	-	t	-	1.5	117	-	-	-	-	2.5	195
Mo.	29,933	1.	309	0.2	62	t	-	t	-	2.	618	-	-	3.2	989
N. D.	32,717	t	-	t	-	t	-	2.	689	0.5	172	0.5	172	5.	1,722
S. D.	15,831	0.5	83	t	-	t	-	3.	500	1.5	250	-	-	5.	833
Nebr.	58,376	-	-	-	-	t	-	2.	1,191	-	-	-	-	2.	1,191
Kans.	239,868	-	-	2.	5,289	0.8	2,116	2.	5,289	-	-	4.5	11,901	9.3	24,595
Del.	2,138	t	-	t	-	-	-	0.5	11	t	-	-	-	1.	22
Md.	9,696	0.5	52	0.5	52	0	0	3.	314	0.5	52	-	-	7.5	784
Va.	13,266	0.5	75	5.	745	1.	149	3.	447	1.	149	-	-	11.	1,640
W. Va.	2,373	-	-	5.	128	-	-	t	-	t	-	-	-	7.	179
N. C.	4,407	0.2	9	3.	142	t	-	t	-	t	-	-	-	7.	331
S. C.	689	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	637	-	-	2.	13	-	-	-	-	2.	13	-	-	4.	26
Ky.	4,840	t	-	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	4,410	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1931 - Wheat (continued)

State	Production: 1,000 Bushels	Estimated reduction in yield of wheat due to diseases													
		Scab		Leaf Rust		Stem Rust		Stinking Smut		Loose Smut		Foot Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Ala.	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	475	0	0	t	-	t	-	t	-	t	-	t	-	3.	15
Okla.	74,919	-	-	5.	3,964	-	-	-	-	-	-	0.5	396	5.5	4,360
Tex.	57,433	1.	618	1.	618	2.	1,236	1.	618	2.	1,236	-	-	7.1	4,388
Mont.	14,634	0	0	t	-	0	0	5.	808	0.5	81	3.6	582	9.1	1,471
Idaho	19,641	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	2,146	-	-	-	-	t	-	-	-	-	-	-	-	-	-
Colo.	16,552	-	-	0	0	t	-	t	-	t	-	5.	871	5.	871
N. Mex.	5,112	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	672	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utah	4,679	-	-	-	-	-	-	1.	47	-	-	-	-	1.	47
Nev.	319	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	40,843	-	-	-	-	-	-	3.	1,263	-	-	-	-	3.	1,263
Oreg.	17,662	-	-	5.	930	-	-	-	-	-	-	-	-	5.	930
Calif.	6,475	-	-	5.	341	-	-	-	-	-	-	-	-	5.	341
U. S.	892,271	0.2	2,085	2.9	26,600	0.6	5,127	1.4	12,749	0.4	3,544	1.5	14,226	7.2	66,091

1932 - WHEAT

Estimated reduction in yield of wheat due to diseases, 1932

State	Production: 1,000 Bushels	Scab: %	Scab: 1,000 Bushels	Leaf Rust: %	Leaf Rust: 1,000 Bushels	Stem Rust: %	Stem Rust: 1,000 Bushels	Stinking Smut: %	Stinking Smut: 1,000 Bushels	Loose Smut: %	Loose Smut: 1,000 Bushels	Foot Rots: %	Foot Rots: 1,000 Bushels	All Diseases: %	All Diseases: 1,000 Bushels
Me.	65	t	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Y.	4,086	0	0	2.	84	t	-	t	-	1.	42	t	-	3.	126
N. J.	1,008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	13,465	t	-	25.	4,987	t	-	3.	598	3.5	698	t	-	32.5	6,482
Ohio	32,456	1.	339	0.5	169	t	-	1.5	508	1.	339	0.1	34	4.2	1,423
Ind.	23,502	-	-	10.	2,611	t	-	-	-	-	-	-	-	10.	2,611
Ill.	24,978	t	-	10.	2,819	t	-	0.5	141	0.9	254	0	0	11.4	3,214
Mich.	16,771	t	-	0.5	92	0.3	55	5.	925	3.	555	t	-	9.3	1,719
Wis.	2,109	0.1	2	0.1	2	0	0	1.	22	1.	22	t	-	2.2	48
Minn.	20,839	t	-	1.	220	1.5	330	0.8	176	1.	220	1.	220	5.3	1,166
Iowa	4,350	1.5	67	0.2	9	t	-	0.2	9	1.	45	-	-	2.9	130
Mo.	15,733	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Dak.	110,396	t	-	t	-	2.	2,374	3.	3,561	0.5	594	0.5	594	7.	8,310
S. Dak.	53,468	-	-	-	-	t	-	2.	1,091	-	-	-	-	2.	1,091
Nebr.	27,958	-	-	-	-	0.8	229	1.5	429	-	-	-	-	2.3	658
Kans.	120,178	0	0	1.5	1,981	0.5	660	2.	2,641	0.5	660	4.5	5,943	9.	11,885
Del.	908	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Md.	4,940	1.5	82	3.	165	0	0	3.	165	1.	55	-	-	10.	549
Va.	6,253	0.5	34	4.	275	1.	69	2.5	172	1.	69	-	-	9.	619
W. Va.	1,276	t	-	10.	184	t	-	1.5	28	5.	92	5.	92	30.5	561
N. C.	3,572	1.	38	1.	38	0	0	1.	38	1.	38	1.	38	7.	267
S. C.	760	-	-	10.	87	2.	17	t	-	1.	9	-	-	13.	113
Ga.	703	-	-	10.	78	t	-	-	-	-	-	-	-	10.	78
Ky.	2,835	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	2,584	-	-	5.	136	-	-	-	-	-	-	-	-	5.	136
Ala.	60	-	-	-	-	-	-	-	-	-					

1932 - Wheat (continued)

State	Production	Estimated reduction in yield of wheat due to diseases													
		Scab		Leaf Rust		Stem Rust		Stinking Smut		Loose Smut		Foot Rots		All Diseases	
	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Ark.	248	-	-	10.	29	t	-	t	-	t	-	t	-	15.	44
Okla.	43,626	-	-	2.	900	-	-	-	-	-	-	1.	450	3.	1,350
Tex.	28,293	0.1	31	1.	315	2.	629	0.5	157	1.	315	2.	629	10.1	3,178
Mont.	55,610	0	0	0.1	58	t	-	1.	582	0.3	175	3.	1,745	4.4	2,560
Idaho	30,656	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	3,102	-	-	-	-	0	0	-	-	-	-	-	-	-	-
Colo.	7,135	-	-	t	-	t	-	t	-	t	-	t	-	t	-
N. Mex.	2,027	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	798	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utah	5,332	-	-	-	-	-	-	2.	109	-	-	-	-	2.	109
Nev.	461	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	40,348	0	0	t	-	t	-	3.	1,261	t	-	t	-	4.	1,681
Oreg.	20,060	-	-	2.	409	-	-	-	-	-	-	-	-	2.	409
Calif.	11,126	-	-	1.	112	-	-	-	-	-	-	-	-	1.	112
U. S.	744,076	t	593	2.1	15,760	0.6	4,363	1.7	12,613	0.6	4,182	1.3	9,745	6.9	50,629

1933 - WHEAT

Estimated reduction in yield of wheat due to diseases, 1933

State	Production: 1,000 Bushels	Estimated reduction in yield of wheat due to diseases													
		Scab		Leaf Rust		Stem Rust		Stinking Smut		Loose Smut		Foot Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Me.	120	-	-	t	-	t	-	t	-	-	-	-	-	-	-
N. Y.	4,512	-	-	-	-	-	-	-	-	1.	46	-	-	1.	46
N. J.	990	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	15,783	1.	196	9.	1,765	t	-	1.5	294	4.	784	t	-	19.5	3,823
Ohio	34,812	0.5	181	0.5	181	t	-	2.	725	1.	363	t	-	4.	1,450
Ind.	22,484	t	t	5.	1,190	0	0	-	-	0.5	119	-	-	5.5	1,309
Ill.	27,418	0.2	59	5.	1,480	0	0	t	-	1.2	355	t	-	7.4	2,190
Mich.	13,457	t	-	t	-	t	-	3.	434	3.	434	0.5	72	7.	1,012
Wis.	1,616	t	-	t	-	0	0	t	-	t		t	-	t	-
Minn.	16,665	0	0	t	-	t	-	0.5	85	1.	169	-	-	1.5	254
Iowa	4,159	t	-	t	-	0	0	0.2	8	1.	42	-	-	1.3	54
Mo.	16,639	1.5	282	0.4	75	t	-	0.2	38	2.	376	2.5	471	11.6	2,183
N. D.	65,386	t	-	t	-	0	0	2.	1,361	0.4	272	0.5	340	3.9	2,653
S. D.	5,120	-	-	-	-	0	0	-	-	-	-	-	-	-	-
Nebr.	29,206	-	-	t	-	-	-	2.	596	-	-	-	-	2.	596
Kans.	57,504	0	0	t	-	t	-	1.	593	0.1	59	2.	1,187	3.1	1,839
Del.	1,078	-	-	0.5	5	-	-	0.5	5	t	-	-	-	1.	10
Md.	6,320	1.5	110	4.	294	0	0	2.	147	1.5	110	-	-	14.	1,028
Va.	7,425	0.7	58	4.5	372	1.	83	3.	248	1.	83	-	-	10.2	844
W. Va.	1,798	0.5	10	5.0	100	-	-	1.	20	1.5	30	-	-	10.	200
N. C.	3,714	1.	41	t	-	t	-	2.	82	1.	41	2.	82	9.	368
S. C.	592	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	536	-	-	10.	60	-	-	-	-	-	-	-	-	10.	60
Ky.	3,240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	2,774	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1933 - Wheat (continued)

State	Production: 1,000 Bushels	Estimated reduction in yield of wheat due to diseases													
		Scab		Leaf Rust		Stem Rust		Stinking Smut		Loose Smut		Foot Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Ala.	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	216	-	-	5.	12	t	-	t	-	t	-	t	-	10.	24
Okla.	33,095	-	-	-	-	-	-	-	-	-	-	0.5	166	0.5	166
Tex.	13,022	0.5	72	2.	289	2.	289	1.	145	2.	289	1.	145	10.	1,446
Mont.	27,194	0	0	t	-	0	0	4.	1,139	0.5	142	-	-	4.5	1,281
Idaho	13,365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	2,138	-	-	-	-	0	0	-	-	-	-	-	-	-	-
Colo.	5,912	-	-	0	0	0	0	0	0	0	0	-	-	-	-
N. Mex.	1,485	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	1,288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utah	4,079	-	-	-	-	-	-	1.	41	-	-	-	-	1.	41
Nev.	375	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	46,249	0	0	t	-	t	-	5.	2,434	t	-	t	-	5.	2,434
Oreg.	17,492	-	-	t	-	0	0	2.	367	t	-	1.7	312	4.7	863
Calif.	12,118	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	527,413	0.2	1,009	1.2	5,323	0.1	372	1.8	8,762	0.7	3,714	0.6	2,775	5.3	26,174

1931 - BARLEY

Estimated reduction in yield of barley due to diseases, 1931

State	Production: 1,000 Bushels	Stripe %	Stripe 1,000 Bushels	Loose Smut %	Loose Smut 1,000 Bushels	Covered Smut %	Covered Smut 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Maine	87	-	-	-	-	-	-	-	-	-	-	-	-
Vt.	150	-	-	-	-	-	-	-	-	-	-	-	-
Conn.		-	-	-	-	-	-	-	-	-	-	1.	-
N. Y.	4,325	t	-	3.	138	2.	92	t	-	-	-	6.	276
N. J.	32	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	1,590	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	2,736	-	-	0.1	3	t	-	1.5	44	0.5	15	7.2	212
Ind.	1,293	-	-	-	-	-	-	-	-	t	-	-	-
Ill.	6,513	-	-	-	-	-	-	-	-	3.	266	3.	266
Mich.	7,228	0.1	7	0.5	37	0.7	52	0.1	7	t	-	2.4	177
Wis.	19,006	1.	200	2.5	500	t	-	t	-	t	-	5.	1,000
Minn.	37,480	2.5	997	2.	797	0.5	199	0	0	t	-	6.	2,391
Iowa	13,546	-	-	-	-	-	-	-	-	0.5	69	1.5	207
Mo.	552	-	-	t	-	-	-	-	-	-	-	t	-
N. D.	18,482	0.5	95	1.	192	1.	192	-	-	t	-	3.5	671
S. D.	15,680	t	-	1.	172	2.	344	-	-	t	-	3.	516
Nebr.	14,091	-	-	-	-	-	-	-	-	t	-	-	-
Kans.	8,726	0.5	46	4.	367	0.5	46	-	-	t	-	5.	459
Del.		-	-	t	-	t	-	-	-	-	-	-	-
Md.	538	t	-	1.	6	10.	59	t	-	t	-	11.	65

1931 - Barley (continued)

State	Production: 1,000 Bushels	Stripe %	Stripe 1,000 Bushels	Loose Smut %	Loose Smut 1,000 Bushels	Covered Smut %	Covered Smut 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
		Estimated reduction in yield of barley due to diseases											
Va.	570	2.	13	3.	19	3.	19	-	-	1.	6	9.	57
N. C.	480	2.	10	2.7	14	t	-	-	-	-	-	5.7	29
Ga.		-	-	-	-	2.	-	-	-	-	-	2.	-
Ky.	356	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	382	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	2,457	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	5,194	-	-	1.	52	-	-	-	-	-	-	1.	52
Mont.	1,946	1.	21	1.	21	2	43	0	0	0	0	9.	192
Idaho	4,108	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	1,568	-	-	-	-	-	-	-	-	t	-	-	-
Colo.	7,099	-	-	t	-	t	-	-	-	t	-	-	-
N. Mex.	253	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	320	-	-	-	-	-	-	-	-	-	-	-	-
Utah	1,216	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	155	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	1,888	-	-	-	-	-	-	-	-	-	-	-	-
Oreg.	2,072	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	13,776	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	198,965	0.9	1,389	1.5	2,313	0.7	1,046	t	51	0.2	356	4.3	6,570

1932 - BARLEY

Estimated reduction in yield of barley due to diseases, 1932

State	Production: 1,000 Bushels	Estimated reduction in yield of barley due to diseases											
		Stripe		Loose Smut		Covered Smut		Leaf Rust		Stem Rust		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	120	-	-	-	-	-	-	-	-	-	-	-	-
Vt.	140	-	-	-	-	-	-	-	-	-	-	-	-
Conn.		0	0	1.	-	-	-	-	-	1.	-	2.	-
N. Y.	3,926	t	-	-	-	-	-	-	-	-	-	-	-
N. J.	25	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	1,725	7.	153	3.	66	6.	131	4.	87	t	-	21.	459
Ohio	1,890	-	-	1.	22	0.2	4	1.5	33	t	-	12.8	279
Ind.	800	-	-	-	-	-	-	-	-	t	-		-
Ill.	10,574	-	-	-	-	-	-	-	-	1.	107	1.	107
Mich.	6,340	t	-	0.5	33	1.	65	t	-	0.5	33	2.5	164
Wis.	23,670	0.5	124	2.5	621	0.1	25	0.1	25	0.	0	4.7	1,167
Minn.	47,232	2.	994	1.5	746	0.5	249	0	0	t	-	5.	2,486
Iowa	15,100	5.	987	1.5	296	0.2	39	0	0	0.3	158	23.5	4,638
Mo.	323	-	-	-	-	-	-	-	-	-	-	-	-
N. Dak.	40,392	0.5	209	1.	419	1.	419	-	-	t	-	3.5	1,466
S. Dak.	47,630	-	-	-	-	-	-	-	-	t	-	-	-
Nebr.	18,360	-	-	-	-	-	-	-	-	0.7	129	0.7	129
Kans.	9,856	2.	214	5.	536	1.	107	t	-	t	-	8.	357
Md.	609	0.5	3	1.	7	7.5	50	t	-	t	-	9.	60

1932 - Barley (continued)

State	Production: 1,000 Bushels	Stripe		Loose Smut		Covered Smut		Leaf Rust		Stem Rust		All Diseases	
		%	Bushels	%	Bushels	%	Bushels	%	Bushels	%	Bushels	%	Bushels
Va.	765	2.	17	3.	25	3.	25	t	-	t	-	8.5	71
W. Va.	114	10.	15	2.	3	5.	3	2.	3	-	-	24.	37
N. C.	265	1.	3	1.	3	1.	3	-	-	-	-	4.	12
Ky.	200	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	324	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	1,725	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	3,570	0.5	19	1.	38	1.	38	0.5	19	1.	38	6.	227
Mont.	3,900	1.	41	1.	41	2.	81	0	0	t	-	4.	163
Idaho	5,568	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	2,540	-	-	-	-	-	-	-	-	0	0	-	-
Colo.	7,244	t	-	1.	73	t	-	t	-	t	-	1.	73
N. Mex.	221	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	735	-	-	-	-	-	-	-	-	-	-	-	-
Utah	1,716	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	265	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	1,920	t	-	1.	19	t	-	0	0	t	-	1.5	29
Oreg.	2,688	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	39,249	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	302,042	1.3	2,779	1.4	2,948	0.6	1,244	t	167	0.2	465	6.	12,424

1933 - BARLEY

Estimated reduction in yield of barley due to diseases, 1933

State	Production: 1,000 Bushels	Stripe %	Stripe 1,000 Bushels	Loose Smut %	Loose Smut 1,000 Bushels	Covered Smut %	Covered Smut 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Maine	155	t	-	t	-	-	-	-	-	t	-	-	-
Vt.	96	-	-	-	-	-	-	-	-	-	-	-	-
Conn.		-	-	-	-	0.5	-	-	-	-	-	1.3	-
N. Y.	3,300	-	-	-	-	-	-	-	-	-	-	-	-
N. J.	28	-	-	-	-	t	-	-	-	-	-	-	-
Pa.	2,025	2.	50	3.8	96	8.7	219	2.	50	t	-	19.5	490
Ohio	660	-	-	1.	7	t	-	1.5	11	0.5	4	6.5	47
Ind.	260	-	-	-	-	-	-	-	-	0.	0	-	-
Ill.	4,785	0.3	15	1.5	75	-	-	t	-	t	-	4.8	241
Mich.	3,250	-	-	0.5	17	1.	33	t	-	t	-	2.	67
Wis.	17,710	0.5	94	2.5	468	t	-	t	-	0	0	5.3	993
Minn.	28,675	1.	300	1.	300	0.5	150	0	0	t	-	4.5	1,351
Iowa	8,512	3.	283	1.5	142	0.2	19	-	-	t	-	9.8	925
Mo.	204	-	-	-	-	-	-	-	-	-	-	-	-
N. D.	18,300	-	-	0.5	94	0.5	94	0	0	0	0	3.	565
S. D.	3,451	-	-	-	-	-	-	-	-	0	0	-	-
Nebr.	8,390	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	3,264	1.	34	2.	68	0.5	17	t	-	0	0	3.5	119
Md.	598	1.	7	1.	7	7.	46	0.5	3	t	-	9.5	63

1933 - Barley (continued)

State	Production: 1,000 Bushels	Stripe %	Stripe 1,000 Bushels	Loose Smut %	Loose Smut 1,000 Bushels	Covered Smut %	Covered Smut 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Va.	833	2.	18	3.5	32	3.5	32	t	-	t	-	9.	82
W. Va.	92	2.	2	2.	2	4.	4	t	-	-	-	8.	8
N. C.	272	1.	3	3.	9	1.	3	t	-	t	-	6.	18
Ky.	276	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	378	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	720	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	1,720	0.5	9	1.	19	1.	19	1.	19	1.	19	7.5	142
Mont.	2,768	1.	29	1.	29	2.	58	0	0	0	0	4.	116
Idaho	4,147	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	1,729	-	-	-	-	-	-	-	-	0	0	-	-
Colo.	6,880	0	0	-	-	0	0	0	0	0	0	-	-
N. Mex.	234	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	700	-	-	-	-	t	-	-	-	-	-	-	-
Utah	1,147	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	150	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	2,590	t	-	t	-	t	-	t	-	t	-	-	-
Oreg.	3,334	-	-	1.	34	-	-	0	0	-	-	1.2	41
Calif.	24,471	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	156,104	0.9	844	1.4	1,399	0.7	594	t	83	t	23	5.2	5,268

1931 - RYE

Estimated reduction in yield of rye due to diseases, 1931

State	Production 1,000 Bushels	Smut %	Smut 1,000 Bushels	Ergot %	Ergot 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Mass.		0	0	1.	-	10.	-	t	-	16.	-
N. Y.	340	t	-	t	-	-	-	-	-	1.	3
N. J.	357	-	-	-	-	-	-	-	-	-	-
Pa.	2,025	-	-	-	-	-	-	-	-	-	-
Ohio	1,332	-	-	-	-	-	-	0	0	1.	13
Ind.	1,827	-	-	-	-	5.	96	0.5	-	5.	96
Ill.	992	-	-	-	-	-	-	0	0	-	-
Mich.	2,133	0.1	2	0.1	2	0.1	2	t	-	0.8	17
Wisc.	2,188	t	-	1.5	33	t	-	0	0	1.5	33
Minn.	5,475	t	-	t	-	0	0	t	-	t	-
Iowa	615	-	-	-	-	-	-	0	0	-	-
Mo.	336	-	-	-	-	-	-	-	-	-	-
N. D.	4,914	-	-	t	-	-	-	0	0	0.5	25
S. D.	2,723	-	-	-	-	-	-	t	-	-	-
Nebr.	2,997	-	-	-	-	-	-	t	-	-	-
Kans.	300	-	-	-	-	-	-	-	-	-	-
Del.	122	-	-	-	-	t	-	-	-	t	-
Md.	378	-	-	t	-	-	-	-	-	t	-
Va.	1,141	-	-	-	-	3.	35	0.5	6	3.5	41
W. Va.	259	-	-	-	-	2.	5	-	-	2.	5
N. C.	576	-	-	t	-	-	-	-	-	1.	6
S. C.	76	-	-	-	-	-	-	-	-	-	-
Ga.	110	-	-	-	-	-	-	-	-	-	-
Ky.	360	-	-	-	-	-	-	-	-	-	-
Tenn.	176	-	-	-	-	-	-	-	-	-	-
Okla.	117	-	-	-	-	-	-	-	-	-	-
Tex.	46	-	-	-	-	-	-	-	-	-	-
Mont.	100	0	0	t	-	t	-	0	0	t	-
Idaho	30	-	-	-	-	-	-	-	-	-	-
Wyo.	112	-	-	-	-	-	-	0	0	-	-
Colo.	371	-	-	-	-	-	-	0	0	-	-
Utah	15	-	-	-	-	-	-	-	-	-	-
Wash.	75	-	-	-	-	-	-	-	-	-	-
Oreg.	123	-	-	-	-	-	-	-	-	-	-
U. S.	32,746	t	2	0.2	35	0.6	138	t	6	1.1	239

1932 - RYE

Estimated reduction in yield of rye due to diseases, 1932

State	Production 1,000 Bushels	Smut %	Smut 1,000 Bushels	Ergot %	Ergot 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
onn.		0	0	-	-	-	-	-	-	2.	-
. Y.	279	-	-	-	-	-	-	-	-	-	-
. J.	374	-	-	-	-	-	-	-	-	-	-
a.	1,550	t	-	t	-	10.	180	t	-	14.	252
hio	572	0.5	3	0.1	1	0.1	1	0	0	1.7	11
nd.	1,024	-	-	-	-	-	-	t	-	-	-
ll.	562	-	-	-	-	-	-	0	0	-	-
ich.	2,133	t	-	t	-	t	-	0	0	t	-
is.	3,048	t	-	1.5	46	t	-	t	-	1.5	46
inn.	4,960	t	-	t	-	t	-	0	0	t	-
owa	594	0	0	t	-	-	-	0	0	t	-
o.	90	-	-	-	-	-	-	-	-	-	-
. D.	12,089	-	-	t	-	0	0	0	0	1.	122
. D.	7,125	-	-	-	-	-	-	0	0	-	-
ebr.	2,830	-	-	-	-	-	-	0.7	20	0.7	20
ans.	209	-	-	-	-	0	0	0	0	-	-
el.	38	-	-	-	-	-	-	-	-	-	-
d.	223	-	-	t	-	0	0	0	0	t	-
a.	530	0	0	t	-	2.5	14	1.	6	4.	23
. Va.	128	-	-	-	-	t	-	-	-	4.	5
. C.	512	-	-	-	-	t	-	-	-	1.	5
. C.	72	-	-	-	-	-	-	-	-	-	-
a.	88	-	-	-	-	-	-	-	-	-	-
la.	-	-	-	-	-	5.	-	-	-	5.	-
.	117	-	-	-	-	-	-	-	-	-	-
enn.	114	-	-	-	-	-	-	-	-	-	-
la.	60	-	-	-	-	-	-	-	-	-	-
ex.	27	0.1	-	t	-	0.5	-	1.	-	5.6	2
ont.	520	0	0	t	-	0	0	0	0	t	-
daho	48	-	-	-	-	-	-	-	-	-	-
yo.	156	-	-	-	-	-	-	0	0	-	-
olo.	150	-	-	t	-	-	-	0	0	t	-
tah	24	-	-	-	-	-	-	-	-	-	-
ash.	96	0	0	0	0	0	0	t	-	t	-
reg.	242	-	-	-	-	-	-	-	-	-	-
. S.	40,639	t	3	0.2	47	0.6	195	0.1	26	1.6	486

1933 - RYE

Estimated reduction in yield of rye due to diseases, 1933

State	Production 1,000 Bushels	Smut %	Smut 1,000 Bushels	Ergot %	Ergot 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Mass.		-	-	t	-	5.	-	-	-	5.	-
Conn.		0	0	-	-	0.5	-	0.5	-	1.5	-
N. Y.	240	-	-	-	-	-	-	-	-	-	-
N. J.	352	-	-	-	-	-	-	-	-	-	-
Pa.	1,606	t	-	t	-	5.	89	t	-	10.	178
Ohio	688	-	-	0.1	1	1.	7	0	0	2.1	15
Ind.	890	-	-	-	-	1.	9	0	0	1.	9
Ill.	625	t	-	0	0	t	-	0	0	0.3	2
Mich.	1,312	t	-	t	-	t	-	t	-	0.5	7
Wis.	2,260	t	-	2.5	58	t	-	t	-	2.5	58
Minn.	3,638	t	-	1.	37	t	-	0	0	1.	37
Iowa	490	-	-	t	-	-	-	0	0	t	-
Mo.	32	-	-	-	-	-	-	-	-	t	-
N. D.	3,712	0	0	t	-	0	0	0	0	0.5	19
S. D.	760	-	-	-	-	-	-	0	0	-	-
Nebr.	1,712	-	-	-	-	-	-	-	-	-	-
Kans.	128	0	0	0	0	t	-	0	0	t	-
Del.	52	-	-	-	-	t	-	-	-	-	-
Md.	221	-	-	-	-	-	-	-	-	-	-
Va.	578	t	-	t	-	2.5	15	1.	6	4.5	27
W. Va.	144	-	-	-	-	3.0	5	-	-	4.0	7
N. C.	420	-	-	-	-	t	-	-	-	1.	4
S. C.	49	-	-	-	-	-	-	-	-	-	-
Ga.	72	-	-	-	-	-	-	-	-	-	-
Fla.		-	-	-	-	3.	-	-	-	3.	-
Ky.	132	-	-	-	-	-	-	-	-	-	-
Tenn.	104	-	-	-	-	-	-	-	-	-	-
Okla.	38	-	-	-	-	-	-	-	-	-	-
Tex.	12	0.5	-	-	-	0.5	-	2.	-	5.	1
Mont.	266	-	-	-	-	-	-	0	0	-	-
Idaho	33	-	-	-	-	-	-	-	-	-	-
Wyo.	126	-	-	-	-	-	-	0	0	-	-
Colo.	117	-	-	-	-	0	0	0	0	-	-
Utah	21	-	-	-	-	-	-	-	-	-	-
Wash.	84	0	0	t	-	t	-	t	-	t	-
Oreg.	220	-	-	-	-	t	-	-	-	t	-
U. S.	21,184	t	-	0.6	96	0.7	125	t	6	2.1	364

Estimated reduction in yield of oats due to diseases, 1931

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases: Loose and Covered Smut %	Loose and Covered Smut 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	Crown Rust %	Crown Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Maine	3,776	-	-	-	-	-	-	-	-
N. H.	228	-	-	-	-	-	-	-	-
Vt.	1,952	-	-	-	-	-	-	-	-
Mass.	132	12.	19	t	-	t	-	15.	24
R. I.	62	-	-	-	-	-	-	-	-
Conn.	232	-	-	-	-	-	-	1.5	4
N. Y.	24,596	3.	793	t	-	4.	1,058	7.	1,851
N. J.	1,333	-	-	-	-	-	-	-	-
Pa.	28,143	15.	4,966	-	-	-	-	15.	4,966
Ohio	62,138	4.	2,619	1.	655	t	-	5.1	3,339
Ind.	61,339	1.	623	0.5	311	t	-	1.5	934
Ill.	142,188	1.5	2,233	3.	4,467	-	-	4.5	6,700
Mich.	43,768	2.	1,026	12.	6,157	0.2	103	14.7	7,543
Wis.	68,852	5.	3,694	1.5	1,108	0.3	222	6.8	5,024
Minn.	123,525	3.	3,860	1.	1,287	t	-	4.	5,147
Iowa	186,806	10.	20,872	0.5	1,044	t	-	10.5	21,916
Mo.	50,355	3.5	1,830	0	0	0.2	105	3.7	1,935
N. D.	18,276	0.5	93	t	-	t	-	1.5	279
S. D.	20,068	2.	409	t	-	-	-	2.	409
Nebr.	49,686	2.	1,014	t	-	-	-	2.	1,014
Kans.	41,085	4.	1,306	t	-	t	-	9.	4,063
Del.	105	t	-	-	-	t	-	t	-
Md.	2,010	5.	106	t	-	t	-	5.	106
Va.	4,838	6.	330	1.	55	5.	275	12.	660
W. Va.	3,552	1.5	58	-	-	5.	192	7.5	288
N. C.	4,531	0.3	14	-	-	t	-	2.	93
S. C.	9,450	1.	95	-	-	-	-	1.	95
Ga.	7,968	3.	251	1.5	125	0.1	8	4.6	384
Fla.	162	5.	10	2.	4	15.	31	22.	45
Ky.	4,872	2.	99	-	-	-	-	2.	99
Tenn.	2,760	-	-	-	-	-	-	-	-
Ala.	3,366	-	-	-	-	5.	177	5.	177
Miss.	1,325	-	-	-	-	5.	70	5.	70
Ark.	4,160	10.	520	t	-	10.	520	20.	1,040
La.	754	3.	26	t	-	10.	87	13.	113
Okla.	43,206	2.	382	-	-	-	-	2.	882
Tex.	59,976	10.	6,777	0.5	339	1.	678	11.5	7,794
Mont.	2,654	6.	177	0	0	t	-	10.	295
Idaho	3,944	3.	122	-	-	-	-	3.	122
Wyo.	1,764	-	-	t	-	-	-	-	-
Colo.	3,404	t	-	t	-	-	-	-	-
N. M.	950	-	-	-	-	-	-	-	-
Ariz.	360	-	-	-	-	-	-	-	-
Utah	1,290	-	-	-	-	-	-	-	-
Nev.	50	-	-	-	-	-	-	-	-
Wash.	7,742	1.	79	-	-	1.	79	2.	158
Oreg.	7,136	1.	76	1.5	113	3.	227	5.5	416
Calif.	1,273	t	-	t	-	2.	26	2.	26
U. S.	1,112,142	4.7	55,479	1.3	15,565	0.3	3,858	6.7	73,011

Estimated reduction in yield of oats due to diseases, 1932

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases: Loose and Covered Smut %	Loose and Covered Smut 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	Crown Rust %	Crown Rust 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Maine	4,940	-	-	-	-	-	-	-	-
N. H.	312	0.5	2	-	-	-	-	0.5	2
Vt.	2,046	-	-	-	-	-	-	-	-
Mass.	165	10.	19	t	-	t	-	13.	25
R. I.	68	-	-	-	-	-	-	-	-
Conn.	279	1.5	4	1.5	4	-	-	3.	8
N. Y.	26,753	5.	868	1.5	434	4.	868	7.5	2,170
N. J.	1,066	2.	22	-	-	-	-	2.	22
Pa.	24,072	6.5	1,710	0.5	132	0.5	132	8.5	2,237
Ohio	45,344	4.	1,911	0.5	239	0.5	239	5.1	2,437
Ind.	58,950	5.	3,103	t	-	-	-	5.	3,103
Ill.	166,462	5.	8,761	t	-	-	-	5.	8,761
Mich.	36,045	2.	742	0.7	260	t	-	2.9	1,076
Wis.	83,655	4.	3,698	0	0	0.1	92	4.1	3,790
Minn.	164,700	2.5	4,289	1.5	2,573	t	-	4.	6,862
Iowa	219,426	7.	17,066	1.	2,438	1.	2,438	10.	24,380
Mo.	36,341	1.	384	1.	384	2.	768	4.	1,536
N. D.	42,084	2.	863	t	-	t	-	2.5	1,079
S. D.	75,432	2.	1,539	t	-	-	-	2.	1,539
Nebr.	74,190	2.	1,595	5.	3,989	-	-	7.	5,584
Kans.	34,572	7.	2,645	t	-	t	-	8.5	3,212
Del.	104	-	-	-	-	-	-	-	-
Md.	1,425	2.	29	0.5	7	0.5	7	3.	43
Va.	3,237	6.6	247	1.	37	6.	225	13.6	509
W. Va.	3,036	10.	405	t	-	10.	405	25.	1,012
N. C.	4,366	1.	45	-	-	-	-	2.	90
S. C.	7,974	5.	433	1.	87	2.	173	8.	693
Ga.	6,993	2.5	212	5.	424	10.	848	17.5	1,484
Fla.	80	5.	5	-	-	20.	21	25.	26
Ky.	2,349	1.	24	-	-	-	-	1.	24
Tenn.	1,910	1.	19	-	-	-	-	1.	19
Ala.	1,435	-	-	-	-	2.	30	2.	30
Miss.	512	2.	12	1.5	8	3.	16	6.5	36
Ark.	1,596	5.	95	t	-	10.	190	16.	304
La.	300	2.	7	2.	7	10.	35	14.	49
Okla.	24,012	-	-	-	-	-	-	-	-
Tex.	41,976	3.	1,482	2.	988	8.	3,951	15.	7,409
Mont.	10,075	6.	664	t	-	0	0	9.	996
Idaho	5,476	1.	55	-	-	-	-	1.	55
Wyo.	3,465	-	-	0	0	-	-	-	-
Colo.	3,736	1.	38	t	-	0	0	1.	38
N. Mex.	920	-	-	-	-	-	-	-	-
Ariz.	364	-	-	-	-	-	-	-	-
Utah	1,636	-	-	-	-	-	-	-	-
Nev.	114	-	-	-	-	-	-	-	-
Wash.	8,300	2.	171	t	-	t	-	3.	257
Oreg.	6,802	2.	139	-	-	0	0	2.	139
Calif.	1,313	-	-	-	-	-	-	-	-
U. S.	1,246,653	4.	53,303	0.9	12,011	0.8	10,433	6.1	81,036

1933 - OATS

Estimated reduction in yield of oats due to diseases, 1933

State	Production	Estimated reduction in yield due to diseases							
	1,000 Bushels	Loose and Covered Smut		Stem Rust		Crown Rust		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Me.	5,200	7.	391	t	-	t	-	7.	391
N. H.	228	-	-	-	-	-	-	-	-
Vt.	1,593	-	-	-	-	-	-	-	-
Mass.	150	12.	21	t	-	t	-	16.	28
R. I.	72	-	-	-	-	-	-	-	-
Conn.	225	1.	2	-	-	1.	2	2.	4
N. Y.	16,310	-	-	-	-	-	-	-	-
N. J.	1,161	-	-	-	-	-	-	-	-
Pa.	20,812	13.	3,202	t	-	0.5	123	15.5	3,818
Ohio	26,096	4.	1,100	t	-	1.	275	5.1	1,402
Ind.	28,067	-	-	0	0	3.	368	3.	368
Ill.	78,760	5.5	4,613	t	-	0.5	419	6.1	5,116
Mich.	23,541	2.	483	t	-	t	-	2.5	604
Wis.	63,882	6.	4,086	0	0	0.1	68	6.2	4,222
Minn.	96,406	2.	1,967	t	-	t	-	2.	1,967
Iowa	134,618	5.	7,085	t	-	t	-	5.	7,085
Mo.	32,634	3.	1,020	t	-	1.	340	4.	1,360
N. D.	22,139	0.5	112	0	0	t	-	1.	224
S. D.	5,220	-	-	0	0	-	-	-	-
Nebr.	23,373	-	-	-	-	-	-	-	-
Kans.	25,976	6.	1,667	0	0	t	-	6.5	1,806
Del.	87	t	-	t	-	-	-	-	-
Md.	1,100	5.	59	t	-	2.	24	7.	83
Va.	3,360	6.5	254	1.5	59	6.	234	14.	547
W. Va.	2,356	5.	128	-	-	3.	77	8.	205
N. C.	3,977	2.	92	6.	370	2.	92	14.	646
S. C.	7,215	-	-	-	-	-	-	-	-
Ga.	5,310	-	-	-	-	20.	1,328	20.	1,328
Fla.	30	4.	5	-	-	30.	36	34.	41
Ky.	1,952	-	-	t	-	-	-	-	-
Tenn.	1,744	-	-	t	-	t	-	-	-
Ala.	1,104	-	-	-	-	5.	58	5.	58
Miss.	336	-	-	-	-	10.	37	10.	37
Ark.	1,648	5.	98	t	-	10.	196	16.	314
La.	261	-	-	-	-	15.	46	15.	46
Okla.	21,478	-	-	-	-	-	-	-	-
Tex.	20,808	5.	1,317	5.	1,317	10.	2,634	21.	5,531
Mont.	6,511	5.	343	0	0	0	0	5.	343
Idaho	4,544	-	-	-	-	-	-	-	-
Wyo.	3,246	-	-	0	0	-	-	-	-
Colo.	4,131	0	0	0	0	0	0	-	-
N. Mex.	836	-	-	-	-	-	-	-	-
Ariz.	377	-	-	-	-	-	-	-	-
Utah	1,550	-	-	-	-	-	-	-	-
Nev.	90	-	-	-	-	-	-	-	-
Wash.	9,847	t	-	t	-	t	-	t	-
Oreg.	9,842	0.5	52	t	-	0	0.	5.	518
Calif.	2,092	-	-	-	-	-	-	-	-
U. S.	722,485	4.2	28,097	0.3	1,746	1.0	6,357	5.8	38,592

Estimated reduction in yield of corn due to diseases, 1931

State	Production 1,000 Bushels	Smut %	Smut 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Brown Spot %	Brown Spot 1,000 Bushels	Black Bundle %	Black Bundle 1,000 Bushels
Maine	588	-	-	t	-	0	0	-	-
N. H.	598	-	-	-	-	0	0	-	-
Vt.	2,944	-	-	-	-	0	0	-	-
Mass.	1,591	2.	37	1.	19	0	0	-	-
R. I.	344	-	-	-	-	0	0	-	-
Conn.	2,142	2.	44	-	-	0	0	-	-
N. Y.	22,074	2.	450	t	-	0	0	-	-
N. J.	6,970	-	-	-	-	0	0	-	-
Pa.	62,766	-	-	-	-	0	0	-	-
Ohio	160,920	3.	5,219	-	-	0	0	-	-
Ind.	168,535	0.3	562	t	-	0	0	t	-
Ill.	339,845	2.5	9,754	-	-	0	0	3.0	11,705
Mich.	40,944	1.	416	t	-	0	0	-	-
Wis.	58,240	1.5	900	t	-	0	0	0	0
Minn.	115,056	10.	13,149	0	0	0	0	-	-
Iowa	389,940	7.	30,329	-	-	-	-	-	-
Mo.	170,060	1.5	2,657	t	-	-	-	t	-
N. D.	21,442	1.	219	t	-	0	0	-	-
S. D.	25,152	3.	782	-	-	0	0	-	-
Nebr.	172,346	3.	5,330	-	-	-	-	-	-
Kans.	113,838	1.	1,200	0	0	0	0	-	-
Del.	4,745	0.5	25	-	-	0	0	-	-
Md.	20,710	0.3	72	t	-	0	0	-	-
Va.	43,061	2.	911	-	-	-	-	0.5	228
W. Va.	12,934	4.	562	t	-	-	-	-	-
N. C.	48,072	2.	1,023	-	-	t	-	-	-
S. C.	22,994	-	-	-	-	-	-	-	-
Ga.	36,720	-	-	-	-	-	-	-	-
Fla.	5,729	2.	138	1.	69	5.	345	-	-
Ky.	80,388	-	-	-	-	-	-	-	-
Tenn.	71,800	-	-	-	-	-	-	-	-
Ala.	43,414	-	-	-	-	-	-	-	-
Miss.	42,532	-	-	-	-	-	-	-	-
Ark.	43,965	1.5	673	t	-	t	-	-	-
La.	20,592	-	-	-	-	-	-	-	-
Okla.	51,808	-	-	-	-	-	-	-	-
Tex.	94,248	2.	2,344	0.1	117	-	-	-	-
Mont.	1,722	t	-	0	0	0	0	t	-
Idaho	1,428	-	-	-	-	0	0	-	-
Wyo.	1,953	-	-	-	-	0	0	-	-
Colo.	19,278	1.	195	-	-	0	0	-	-
N. Mex.	5,660	-	-	-	-	0	0	-	-
Ariz.	576	-	-	-	-	0	0	-	-
Utah	320	-	-	-	-	0	0	-	-
Nev.	40	-	-	-	-	0	0	-	-
Wash.	1,369	-	-	-	-	0	0	-	-
Oreg.	1,860	-	-	-	-	0	0	-	-
Calif.	2,610	-	-	-	-	0	0	-	-
U. S.	2,556,863	3.4	76,991	t	205	t	345	0.5	11,933

State	Estimated reduction in yield of corn due to disease							
	Root Rots		Ear Rots		Stalk Rots		All Diseases	
	%	1000 Bushels	%	1000 Bushels	%	1000 Bushels	%	1000 Bushels
Maine	-	-	t	-	-	-	t	-
N. H.	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-
Mass.	5.	94	2.	37	-	-	15.	281
R. I.	-	-	-	-	-	-	-	-
Conn.	-	-	-	-	-	-	2.	44
N. Y.	-	-	-	-	-	-	2.	450
N. J.	-	-	-	-	-	-	-	-
Pa.	-	-	-	-	-	-	-	-
Ohio	0.5	870	1.	1,740	3.	5,219	7.5	13,048
Ind.	-	-	1.1	2,062	2.2	4,124	10.1	18,933
Ill.	3.	11,705	3.4	13,266	1.0	3,902	12.9	50,332
Mich.	0.1	42	0.1	42	-	-	1.5	625
Wis.	0.3	180	1.	600	t	-	3.	1,800
Minn.	t	-	-	-	-	-	12.5	16,436
Iowa	-	-	3.	12,998	-	-	10.	43,327
Mo.	t	-	1.5	2,657	1.	1,771	4.	7,085
N. D.	t	-	t	-	t	-	2.	438
S. D.	0.5	130	t	-	-	-	3.5	912
Nebr.	-	-	-	-	-	-	3.	5,330
Kans.	4.	4,798	-	-	-	-	5.1	6,118
Del.	-	-	1.	49	1.	49	3.5	172
Md.	5.	1,201	8.	1,922	0.5	120	13.8	3,315
Va.	-	-	2.	911	1.	456	5.5	2,506
W. Va.	-	-	2.	281	2.	281	8.	1,124
N. C.	-	-	3.	1,534	-	-	6.	3,068
S. C.	-	-	-	-	-	-	-	-
a.	-	-	-	-	-	-	-	-
Fla.	2.	138	4.	276	-	-	17.	1,173
y.	-	-	-	-	-	-	-	-
enn.	-	-	-	-	-	-	-	-
la.	-	-	-	-	-	-	-	-
iss.	-	-	-	-	-	-	-	-
rk.	-	-	-	-	-	-	2.	897
a.	-	-	-	-	-	-	-	-
kla.	-	-	-	-	-	-	-	-
ex.	3.	3,517	9.	10,550	0.5	586	19.6	22,975
Mont.	-	-	-	-	-	-	t	-
Idaho	-	-	-	-	-	-	-	-
o.	-	-	-	-	-	-	-	-
olo.	-	-	-	-	-	-	1.	195
Mex.	-	-	-	-	-	-	-	-
iz.	-	-	-	-	-	-	-	-
ah	-	-	-	-	-	-	-	-
v.	-	-	-	-	-	-	-	-
sh.	-	-	-	-	-	-	-	-
eg.	-	-	-	-	-	-	-	-
Clif.	-	-	-	-	-	-	-	-
S.	1.	22,675	2.1	48,925	0.7	16,508	8.7	200,534

Estimated reduction in yield of corn due to diseases, 1932

State	Production: 1,000 Bushels	Estimated reduction in yield of corn due to disease							
		Smut		Leaf Rust		Brown Spot		Black Bundle	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Me.	656	-	-	-	-	0	0	-	-
N. H.	560	t	-	-	-	0	0	-	-
Vt.	2,624	-	-	-	-	0	0	-	-
Mass.	1,520	5.	88	1.	18	0	0	t	t
R. I.	351	-	-	-	-	0	0	-	-
Conn.	2,268	1.5	36	0.5	12	0	0	-	-
N. Y.	20,405	-	-	-	-	0	0	-	-
N. J.	6,930	-	-	-	-	0	0	-	-
Pa.	46,435	4.	2,381	t	-	0	0	1.	595
Ohio	121,872	3.	3,369	t	-	0	0	-	-
Ind.	173,962	-	-	-	-	0	0	-	-
Ill.	402,179	1.7	8,743	-	-	0	0	3.	15,429
Mich.	46,431	5.	2,510	t	-	0	0	0	0
Wis.	80,808	1.5	1,241	t	-	0	0	0	0
Minn.	180,492	5.	9,500	0	0	0	0	-	-
Iowa	509,507	5.	30,184	0	0	-	-	-	-
Mo.	197,396	-	-	-	-	-	-	-	-
N. D.	26,676	3.	842	t	-	0	0	-	-
S. D.	73,941	-	-	-	-	0	0	-	-
Nebr.	269,293	3.	8,329	-	-	-	-	-	-
Kans.	136,197	1.	1,419	t	-	-	-	-	-
Del.	4,263	-	-	-	-	0	0	-	-
Md.	16,440	-	-	-	-	0	0	-	-
Va.	26,928	3.	893	-	-	-	-	t	-
W. Va.	11,150	5.	743	t	-	0	0	-	-
N. C.	34,830	3.	1,161	-	-	1.1	387		
S. C.	17,885	5.	1,005	1.	201	t	-	-	-
Ga.	38,560	-	-	-	-	-	-	-	-
Fla.	5,640	0.5	36	2.	142	4.	285	-	-
Ky.	67,464	-	-	-	-	-	-	-	-
Tenn.	59,418	-	-	-	-	-	-	-	-
Ala.	37,076	-	-	-	-	-	-	-	-
Miss.	32,589	-	-	-	-	-	-	-	-
Ark.	35,874	1.	366	t	-	t	-	t	-
La.	17,906	t	-	t	-	t	-	t	-
Okla.	65,760	-	-	-	-	-	-	-	-
Tex.	102,726	5.	5,857	0.1	117	-	-	0.1	117
Mont.	2,580	t	-	0	0	0	0	t	-
Idaho	2,255	-	-	-	-	0	0	-	-
Wyo.	2,052	-	-	-	-	0	0	-	-
Colo.	14,318	7.	1,078	-	-	0	0	-	-
N. Mex.	3,267	-	-	-	-	0	0	-	-
Ariz.	615	-	-	-	-	0	0	-	-
Utah	540	-	-	-	-	0	0	-	-
Nev.	48	-	-	-	-	0	0	-	-
Wash.	1,311	t	-	0	0	0	0	0	0
Oreg.	2,015	-	-	-	-	0	0	-	-
Calif.	2,660	-	-	-	-	0	0	-	-
U. S.	2,906,873	3.1	80,281	t	490	t	672	0.6	16,141

State	Estimated reduction in yield of corn due to disease							
	Root Rots		Ear Rots		Stalk Rots		All Diseases	
	%	1000 Bushels	%	1000 Bushels	%	1000 Bushels	%	1000 Bushels
Maine	-	-	-	-	-	-	-	-
N. H.	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-
Mass.	5.	88	-	-	-	-	14.	247
R. I.	-	-	-	-	-	-	-	-
Conn.	-	-	0.5	12	-	-	5.5	132
N. Y.	-	-	-	-	-	-	-	-
N. J.	-	-	-	-	-	-	-	-
Pa.	3.	1,736	4.	2,381	10.	5,953	22.	13,096
Ohio	1.	1,290	1.	1,290	0.2	258	5.5	7,094
Ind.	-	-	-	-	-	-	-	-
Ill.	4.5	23,143	6.6	33,943	6.	30,858	21.8	112,116
Mich.	t	-	2.	1,004	t	-	7.5	3,765
Wis.	0.1	83	0.5	414	0.2	165	2.3	1,903
Minn.	-	-	-	-	-	-	5.	9,500
Iowa	-	-	5.6	33,806	5.	30,184	15.6	94,174
Mo.	0.5	992	-	-	-	-	0.5	992
N. D.	t	-	1.	281	t	-	5.	1,404
S. D.	-	-	-	-	-	-	-	-
Neb.	-	-	-	-	-	-	3.	8,329
Kans.	-	-	2.	2,837	1.	1,419	4.	5,675
Del.	-	-	-	-	-	-	-	-
Md.	2.	354	2.	354	3.	530	7.	1,238
Va.	t	-	2.5	744	3.5	1,041	9.5	2,327
W. Va.	-	-	10.	1,487	10.	1,487	25.	3,717
N. C.	t	-	3.	1,161	1.	387	10.	3,870
S. C.	2.	402	3.	603	t	-	11.	2,211
Ga.	-	-	-	-	-	-	-	-
Fla.	-	-	11.	783	0.5	36	13.	1,232
Ky.	-	-	-	-	-	-	-	-
Tenn.	-	-	-	-	-	-	-	-
Ala.	-	-	-	-	-	-	-	-
Miss.	-	-	-	-	-	-	-	-
Ark.	-	-	t	-	t	-	2.	732
La.	2.	389	5.	973	1.	195	8.	1,557
Okla.	-	-	-	-	-	-	-	-
Tex.	0.1	117	2.	2,343	2.	2,343	12.3	14,408
Mont.	-	-	-	-	-	-	t	-
Idaho	-	-	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-
Colo.	-	-	t	-	-	-	7.	1,078
N. Mex.	-	-	-	-	-	-	-	-
Ariz.	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	-	-	-	-
Wash.	0	0	t	-	t	-	t	-
Oreg.	-	-	-	-	-	-	-	-
Calif.	-	-	-	-	-	-	-	-
U. S.	1.1	23,644	3.2	84,416	2.9	74,856	11.2	291,347

Estimated reduction in yield of corn due to diseases, 1933

State	Production: 1,000 Bushels	Estimated reduction in yield of corn due to disease							
		Smut		Leaf Rust		Brown Rot		Black Bundle	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000
Maine	697	t	-	t	-	0	0	-	-
N. H.	600	-	-	-	-	0	0	-	-
Vt.	2,520	-	-	-	-	0	0	-	-
Mass.	1,520	8.	156	2.	39	0	0	-	-
R. I.	410	-	-	-	-	0	0	-	-
Conn.	2,067	1.5	34	0.3	7	0	0	-	-
N. Y.	17,546	-	-	t	-	0	0	-	-
N. J.	6,012	-	-	-	-	0	0	-	-
Pa.	50,560	4.	2,528	t	-	0	0	1.	632
Ohio	112,694	5.	6,092	-	-	0	0	-	-
Ind.	125,906	0.2	256	t	-	0	0	0.4	533
Ill.	224,748	1.5	4,742	0	0	0	0	4.	12,644
Mich.	42,315	5.	2,300	t	-	0	0	t	-
Wis.	77,980	2.	1,603	t	-	0	0	0	0
Minn.	142,957	5.	7,524	0	0	0	0	-	-
Iowa	439,951	6.	29,527	-	-	0	0	-	-
Mo.	141,446	1.	1,478	0.1	148	t	-	t	-
N. D.	20,010	2.	417	0	0	0	0	-	-
S. D.	40,440	-	-	-	-	0	0	-	-
Nebr.	234,698	3.	7,259	-	-	0	0	-	-
Kans.	80,431	3.	2,581	0	0	0	0	-	-
Del.	3,625	t	-	-	-	0	0	-	-
Md.	14,000	0.5	78	t	-	0	0	-	-
Va.	36,918	4.	1,678	-	-	0	0	1.5	629
W. Va.	13,920	4.	640	-	-	0	0	-	-
N. C.	44,252	1.	497	t	-	2.	994	-	-
S. C.	22,808	-	-	-	-	-	-	-	-
Ga.	39,270	-	-	-	-	-	-	-	-
Fla.	5,384	0.5	34	3.	202	4.	269	-	-
Ky.	68,175	-	-	-	-	-	-	-	-
Tenn.	66,035	-	-	-	-	-	-	-	-
Ala.	36,978	-	-	-	-	-	-	-	-
Miss.	35,850	-	-	-	-	-	-	-	-
Ark.	27,716	t	-	t	-	t	-	t	-
La.	15,574	-	-	-	-	-	-	-	-
Okla.	19,435	-	-	-	-	-	-	-	-
Tex.	74,824	1.	866	0.1	87	-	-	0.5	433
Mont.	2,472	-	-	-	-	0	0	-	-
Idaho	1,950	-	-	-	-	0	0	-	-
Wyo.	2,080	-	-	-	-	0	0	-	-
Colo.	22,044	0	0	-	-	0	0	-	-
N. Mex.	3,332	-	-	-	-	0	0	-	-
Ariz.	738	-	-	-	-	0	0	-	-
Utah	463	-	-	-	-	0	0	-	-
Nev.	44	-	-	-	-	0	0	-	-
Wash.	1,553	t	-	0	0	0	0	0	0
Oreg.	2,414	-	-	-	-	0	0	-	-
Calif.	2,800	-	-	-	-	0	0	-	-
U S	2,330,237	3.3	70,300	t	483	t	1,263	0.7	14,871

State	Estimated reduction in yield of corn due to disease							
	Root Rots		Ear Rots		Stalk Rots		All Diseases	
	%	1000 Bushels	%	1000 Bushels	%	1000 Bushels	%	1000 Bushels
Maine	-	-	t	-	3.	22	3.	22
N. H.	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-
Mass.	t	-	t	-	11.	214	22.	428
R. I.	-	-	-	-	-	-	-	-
Conn.	0.5	11	-	-	5.	113	8.8	199
N. Y.	-	-	-	-	-	-	-	-
N. J.	-	-	-	-	-	-	-	-
Pa.	-	-	-	-	10.	6,320	20.	12,640
Ohio	0.5	609	1.	1,218	1.	1,218	7.5	9,137
Ind.	0.2	266	2.7	3,597	2.	2,665	5.5	7,327
Ill.	5.	15,805	12.4	39,197	6.	18,966	28.9	91,354
Mich.	0.5	230	1.5	690	0.5	230	8.	3,680
Wis.	0.1	80	0.5	401	0.1	80	2.7	2,164
Minn.	-	-	-	-	-	-	5.	7,524
Iowa	-	-	4.6	22,637	-	-	10.6	52,164
Mo.	1.5	2,217	1.5	2,217	t	-	4.3	6,356
N. D.	-	-	1.	208	-	-	4.	833
S. D.	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	3.	7,259
Kans.	0.5	430	1.	860	2.	1,720	6.5	5,591
Del.	-	-	-	-	-	-	-	-
Md.	5.5	860	3.5	547	1.	156	10.5	1,641
Va.	t	-	2.5	1,049	3.5	1,468	12.	5,034
W. Va.	2.5	400	2.5	400	4.	640	13.	2,080
N. C.	-	-	5.	2,486	-	-	11.	5,469
S. C.	-	-	-	-	-	-	-	-
Ga.	-	-	-	-	-	-	-	-
Fla.	12.	808	-	-	-	-	20.	1,347
Ky.	-	-	-	-	-	-	-	-
Tenn.	-	-	-	-	-	-	-	-
Ala.	-	-	-	-	-	-	-	-
Miss.	-	-	-	-	-	-	-	-
Ark.	-	-	t	-	t	-	2.	566
La.	-	-	-	-	-	-	-	-
Okla.	-	-	-	-	-	-	-	-
Tex.	1.	866	4.	3,464	2.	1,732	13.6	11,778
Mont.	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-
Colo.	-	-	-	-	-	-	-	-
N. Mex.	-	-	-	-	-	-	-	-
Ariz.	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	-	-	-	-
Wash.	0	0	t	-	t	-	t	-
Oreg.	2.	50	t	-	-	-	2.5	62
Calif.	-	-	-	-	-	-	-	-
U. S.	1.	22,632	3.7	78,971	1.7	35,544	10.9	234,655

1931 - SWEET CORN

Estimated reduction in yield of sweet corn due to diseases, 1931

State	*Production: Tons	Smut: %	Smut: Tons	Bacterial Wilt: %	Bacterial Wilt: Tons	Diplodia: %	Diplodia: Tons	All Diseases: %	All Diseases: Tons
Maine	35,700	-	-	-	-	-	-	-	-
N. H.	2,600	-	-	-	-	-	-	-	-
Vt.	3,200	-	-	-	-	-	-	-	-
Mass.	-	-	-	t	-	-	-	-	-
N. Y.	46,700	1.	472	0	0	-	-	1.	472
N. J.	-	-	-	3.	-	-	-	3.	-
Pa.	9,400	5.	522	-	-	-	-	10.	1,044
Ohio	72,700	1.	769	3.	2,308	1.	769	5.5	4,231
Ind.	92,400	2.	2,124	1.	1,062	10.	10,621	13.	13,807
Ill.	161,000	-	-	-	-	-	-	-	-
Mich.	7,600	15.	1,341	0.	0	-	-	15.	1,341
Wis.	28,800	-	-	-	-	-	-	-	-
Minn.	87,700	-	-	-	-	-	-	-	-
Iowa	123,700	-	-	-	-	-	-	-	-
Nebr.	10,900	-	-	-	-	-	-	-	-
Kans.	-	-	-	t	-	-	-	-	-
Del.	8,200	-	-	-	-	-	-	-	-
Md.	71,600	-	-	t	-	-	-	-	-
W. Va.	-	-	-	10.	-	-	-	10.	-
Tenn.	9,000	-	-	-	-	-	-	-	-
Tex.	-	-	-	0.1	-	-	-	-	-
Other States	10,400	-	-	-	-	-	-	-	-
U. S.	781,600	1.6	5,228	1.1	3,370	3.5	11,390	6.5	20,895

* Production figures are of sweet corn for manufacture

1932 - SWEET CORN

Estimated reduction in yield of sweet corn due to diseases, 1932

State	*Production: Tons	Estimated reduction in yield due to diseases							
		Smut		Bacterial Wilt		Diplodia		All Diseases	
		%	Tons	%	Tons	%	Tons	%	Tons
aine	29,200	-	-	-	-	-	-	-	-
. H.	1,600	-	-	-	-	-	-	-	-
t.	1,[illegible]00	-	-	-	-	-	-	-	-
ass.	-	10.	-	0.5	-	-	-	10.5	-
onn.	-	-	-	4.5	-	-	-	4.5	-
. Y.	20,900	2.5	597	10.	2,389	-	-	12.5	2,986
. J.	-	-	-	3.	-	-	-	3.	-
a.	3,100	5.	344	45.	3,100	-	-	55.	3,788
hio	17,600	1.5	305	10.	2,035	1.	203	13.5	2,746
nd.	50,600	5.	3,614	20.	14,457	5.	3,614	30.	21,685
ll.	91,000	-	-	-	-	-	-	-	-
ich.	4,300	-	-	15.	860	-	-	25.	1,433
is.	5,500	-	-	-	-	-	-	-	-
inn.	93,800	-	-	-	-	-	-	-	-
owa	17,000	8.	1,766	5.	1,104	6.	1,325	23.	5,078
ebr.	6,500	-	-	-	-	-	-	-	-
ans.	-	-	-	t	-	-	-	-	-
el.	3,600	-	-	-	-	-	-	-	-
d.	30,[illegible]00	0.5	155	t	-	-	-	0.5	155
. Va.	-	-	-	5.	-	-	-	5.	-
enn.	4,100	-	-	-	-	-	-	-	-
ther States	5,500	-	-	-	-	-	-	-	-
. S.	386,900	3.7	6,781	13.1	23,945	2.6	5,142	20.7	37,871

Production figures are of sweet corn for manufacture

1933 - SWEET CORN

Estimated reduction in yield of sweet corn due to diseases, 1933

State	*Production: Tons	Estimated reduction in yield due to diseases							
		Smut		Bacterial Wilt		Diplodia		All Diseases	
		%	Tons	%	Tons	%	Tons	%	Tons
Maine	29,900	t	-	5.	1,574	-	-	5.	1,574
N. H.	1,500	-	-	-	-	-	-	-	-
Vt.	2,300	-	-	-	-	-	-	-	-
Mass.	-	-	-	10.	-	-	-	10.	-
Conn.	-	-	-	5.	-	-	-	5.	-
N. Y.	20,300	3.	708	11.	2,597	-	-	14.	3,305
N. J.	-	-	-	-	-	-	-	-	-
Pa.	2,700	5.	208	25.	1,039	-	-	35.	1,455
Ohio	18,400	4.	841	7.	1,472	1.	210	12.5	2,628
Ind.	34,600	3.	1,266	10.	4,220	5.	2,110	18.	7,596
Ill.	77,500	-	-	-	-	-	-	-	-
Mich.	2,300	-	-	6.	147	-	-	6.	147
Wis.	10,100	-	-	-	-	-	-	-	-
Minn.	98,600	-	-	-	-	-	-	-	-
Iowa	41,100	10.	5,480	5.	2,740	-	-	25.	13,700
Mo.	-	-	-	0.2	-	-	-	-	-
Nebr.	7,000	-	-	-	-	-	-	-	-
Del.	4,000	-	-	-	-	-	-	-	-
Md.	35,300	-	-	1.	357	-	-	1.0	357
W. Va.	-	3.	-	20.	-	-	-	28.	-
Tenn.	2,300	-	-	-	-	-	-	-	-
Other States	5,100	-	-	-	-	-	-	-	-
U. S.	393,000	3.9	8,503	6.6	14,146	1.1	2,320	14.3	30,762

*Production figures are of sweet corn for manufacture

1931 - SWEET POTATO

Estimated reduction in yield of sweet potato due to diseases, 1931

State	Production	Estimated reduction in yield due to diseases							
	1,000	Stem Rot		Black Rot		All Diseases		Storage Rot	
	Bushels		1,000		1,000		1,000		1,000
		%	Bushels	%	Bushels	%	Bushels	%	Bushels
. J.	1,950	12.	272	2.	45	14.	317	5.	98
nd.	540	5.	29	t	6	7.	41	5.	27
ll.	636	-	-	1.	6	1.	6	-	-
owa	300	5.	16	3.	10	8.	26	5.	15
o.	900	2.	19	2.	19	4.	38	10.	90
ans.	570	5.	32	5.	32	10.5	67	8.	46
el.	1,400	5.	76	2.5	38	7.5	114	5.	70
d.	2,013	1.	21	0.5	10	3.	62	15.	302
a.	4,750	15.	902	3.	180	21.	1,262	15.	713
. C.	6,560	3.	209	1.	70	6.	419	18.	1,181
. C.	3,180	3.	100	2.	67	5.	167	15.	477
a.	4,550	1.	47	2.	94	3.	141	15.	683
la.	1,638	t	-	t	-	3.	51	15.	246
y.	2,100	t	-	2.	43	2.	43	10.	210
enn.	5,440	t	-	2.	111	2.	111	10.	544
la.	5,304	t	-	2.	108	2.	108	10.	530
iss.	5,355	t	-	2.	109	2.	109	10.	536
rk.	2,880	5.	157	3.	94	8.	251	15.	432
a.	5,400	t	-	-	-	-	-	-	-
kla.	1,330	-	-	-	-	-	-	-	-
ex.	4,968	0.5	29	10.	538	15.5	911	5.	248
alif.	1,140	t	-	-	-	1.	12	-	-
. S.	62,904	3.2	1,909	2.7	1,630	7.0	4,256	11.9	6,448

1932 - SWEET POTATO

Estimated reduction in yield of sweet potato due to diseases, 1932

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases							
		Stem Rot		Black Rot		All Diseases		Storage Rot	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
N. J.	1,560	5.	82	t	-	5.	82	5.	78
Ind.	440	3.	14	-	-	3.	14	5.	22
Ill.	735	2.	15	-	-	2.	15	-	-
Iowa	300	15.	59	8.	31	23.	90	4.	12
Mo.	900	-	-	-	-	-	-	-	-
Kans.	720	5.	40	4.	32	10.	80	8.	58
Del.	805	5.	43	2.	17	7.	60	5.	40
Md.	888	2.	18	0.5	5	3.5	32	5.	44
Va.	3,610	15.	645	t	-	16.	688	20.	722
N. C.	7,990	8.	761	3.	285	16.	1,522	20.	1,598
S. C.	6,072	1.	65	3.	194	6.	383	40.	2,429
Ga.	8,938	t	-	-	-	-	-	10.	894
Fla.	1,500	2.	34	4.	67	11.	185	12.	180
Ky.	2,200	-	-	-	-	-	-	-	-
Tenn.	6,600	-	-	-	-	-	-	-	-
Ala.	8,585	-	-	-	-	-	-	-	-
Miss.	7,900	-	-	-	-	-	-	-	-
Ark.	2,660	5.	153	5.	153	13.	398	15.	399
La.	5,544	t	-	-	-	-	-	-	-
Okla.	1,584	-	-	-	-	-	-	-	-
Tex.	7,600	0.5	45	10.	900	15.6	1,404	10.	760
Calif.	1,300	t	-	-	-	-	-	-	-
U. S.	78,431	5.	1,974	4.2	1,684	12.4	4,958	16.8	7,236

1933 - SWEET POTATO

Estimated reduction in yield of sweet potato due to diseases, 1933

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases							
		Stem Rot		Black Rot		All Diseases		Storage Rot	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
N. J.	1,925	5.	105	2.	42	8.	168	5.	96
Ind.	400	3.	13	1.	4	5.	21	4.	16
Ill.	420	2.	9	-	-	2.	9	-	-
Iowa	270	5.	15	3.	9	8.	24	2.	5
Mo.	750	5.	40	1.	8	6.2	50	2.5	19
Kans.	490	5.	27	3.	16	9.	48	8.	39
Del.	910	5.	48	0.5	5	5.5	53	4.	36
Md.	840	2.5	23	0.5	5	9.	83	10.	84
Va.	3,885	10.	437	0.5	22	11.	481	10.	389
N. C.	7,905	8.	719	2.	180	12.	1,079	20.	1,581
S. C.	4,643	t	-	2.	95	2.	95	10.	465
Ga.	7,600	t	-	2.	155	2.	155	-	-
Fla.	1,470	-	-	t	-	-	-	-	-
Ky.	1,340	-	-	-	-	-	-	-	-
Tenn.	4,500	-	-	-	-	-	-	-	-
Ala.	5,396	-	-	-	-	-	-	-	-
Miss.	5,670	-	-	-	-	-	-	-	
Ark.	2,380	5.	137	5.	137	13.	356	15.	357
La.	5,180	-	-	-	-	-	-	-	-
Okla.	1,404	-	-	-	-	-	-	-	-
Tex.	6,240	1.	77	10.	771	19.1	1,473	10.	624
alif.	950	t	-	-	-	-	-	-	-
U. S.	65,073	3.9	1,650	3.4	1,449	9.6	4,095	12.1	3,711

1931 - POTATOES

Estimated reduction in yield of potatoes due to diseases, 1931

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases							
		Mosaic		Leaf Roll		Late Blight		Rhizoctonia	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	50,960	-	-	-	-	7.	3,836	-	-
N. H.	1,485	-	-	-	-	-	-	-	-
Vt.	2,550	-	-	-	-	-	-	-	-
Mass.	1,625	8.	241	5.	150	10.	301	10.	301
R. I.	300	-	-	-	-	-	-	-	-
Conn.	1,920	-	-	-	-	-	-	-	-
N. Y.	28,684	4.	1,725	5.	2,157	t	-	4.	1,725
N. J.	7,831	-	-	2.	183	0	0	1.5	137
Pa.	26,549	-	-	-	-	-	-	-	-
Ohio	11,220	2.	277	5.	693	t	-	2.	277
Ind.	4,930	-	-	3.	152	0	0	-	-
Ill.	4,675	-	-	-	-	0	0	-	-
Mich.	23,750	1.	315	1.	315	0	0	0.5	158
Wis.	24,924	0.5	136	t	-	0	0	1.	272
Minn.	28,880	5.	1,925	-	-	0	0	4.	1,540
Iowa	4,455	-	-	-	-	0	0	-	-
Mo.	3,675	2.	83	-	-	0	0	1.8	75
N. D.	8,436	1.	88	t	-	0	0	0.5	44
S. D.	2,160	t	-	t	-	0	0	t	-
Neb.	6,812	-	-	-	-	0	0	-	-
Kans.	3,634	t	-	-	-	0	0	6.	180
Del.	540	0.5	3	0.5	3	-	-	t	-
Md.	3,360	2.	81	2.	81	2.	81	5.	202
Va.	14,160	2.	378	5.	944	0	0	7.	1,322
W. Va.	3,200	3.	185	10.	615	0	0	1.	62
N. C.	8,532	-	-	-	-	-	-	t	-
S. C.	3,550	-	-	-	-	-	-	-	-
Ga.	1,224	-	-	-	-	-	-	-	-
Fla.	3,640	t	-	t	-	1.	44	10.	439
Ky.	3,960	2.	86	0.5	22	-	-	1.	43
Tenn.	3,021	-	-	-	-	-	-	-	-
Ala.	3,666	-	-	-	-	-	-	-	-
Miss.	1,134	-	-	-	-	-	-	-	-
Ark.	3,784	5.	296	t	-	0	0	t	-
La.	3,936	-	-	-	-	0	0	-	-
Okla.	3,240	-	-	-	-	0	0	-	-
Tex.	4,891	2.	112	0.1	6	3.	168	1.	56
Mont.	1,805	5.	107	-	-	0	0	3.	64
Idaho	24,200	-	-	-	-	0	0	-	-
Wyo.	3,360	-	-	-	-	0	0	-	-
Colo.	9,595	-	-	-	-	0	0	t	-
N. M.	385	-	-	-	-	0	0	-	-
Ariz.	255	-	-	-	-	0	0	-	-
Utah	1,950	-	-	-	-	0	0	-	-
Nev.	300	-	-	-	-	0	0	-	-
Wash.	6,820	-	-	-	-	-	-	-	-
Oreg.	5,460	-	-	-	-	-	-	-	-
Calif.	6,825	-	-	-	-	-	-	-	-
U. S.	376,248	2.	6,038	1.7	5,321	1.4	4,430	2.3	6,897

	Estimated reduction in yield due to diseases											
State	Blackleg		Fusarium Wilt		Tipburn and Hopperburn		Early Blight		Scab		All Diseases	
	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	-	-	-	-	-	-	-	-	-	-	7.	3,836
N. H.	-	-	-	-	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-	-	-	-	-
Mass.	t	-	-	-	10.	301	3.	90	t	-	46.	1,384
R. I.	-	-	-	-	-	-	-	-	-	-	-	-
Conn.	-	-	-	-	-	-	-	-	-	-	-	-
N. Y.	t	-	t	-	15.	6,470	-	-	5.	2,157	33.5	14,450
N. J.	-	-	-	-	8.	733	-	-	3.	275	14.5	1,328
Pa.	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	0.5	69	0.2	28	7.	970	2.	277	0.3	42	19.	2,633
Ind.	-	-	-	-	-	-	-	-	-	-	3.	152
Ill.	-	-	-	-	-	-	-	-	-	-	-	-
Mich.	1.	315	0.1	32	5.	1,577	0.1	32	1.	315	24.7	7,790
Wis.	t	-	0.5	136	5.	1,362	t	-	t	-	8.5	2,315
Minn.	1.	385	2.	770	5.	1,925	t	-	3.	1,155	25.	9,625
Iowa	-	-	-	-	-	-	-	-	-	-	-	-
Mo.	1.	41	t	-	1.5	62	-	-	2.5	104	11.3	469
N. D.	1.	88	-	-	1.	88	t	-	-	-	4.5	396
S. D.	-	-	-	-	-	-	-	-	5.	114	5.	114
Nebr.	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	2.	60	t	-	-	-	-	-	2.	60	12.	360
Del.	-	-	t	-	0.5	3	t	-	-	-	3.5	20
Md.	0.5	20	2.	81	0.5	20	0.5	20	2.5	101	17.	687
Va.	1.	139	-	-	0	0	10.	1,388	-	-	25.	4,721
W. Va.	2.5	154	1.5	92	30.	1,846	t	-	t	-	48.	2,954
N. C.	1.	88	-	-	-	-	t	-	1.	88	3.	264
S. C.	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	-	-	-	-	-	-	-	-	-	-	-	-
Fla.	t	-	-	-	-	-	1.	44	0.5	22	17.	746
Ky.	3.	129	-	-	1.	43	-	-	-	-	8.	345
Tenn.	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	-	-	-	-	30.	1,774	t	-	-	-	36.	2,129
La.	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	t	-	0.5	28	0.5	28	1.	56	2.	112	12.6	706
Mont.	1.	21	4.	86	1.	21	0	0	-	-	16.	342
Idaho	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	-	-	-	-	-	-	-	-	-	-	-	-
N. Mex.	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	-	-	-	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	-	-	-	-	-	-	-	-	-	-	-	-
Oreg.	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	0.5	1,559	0.4	1,253	5.6	17,223	0.8	2,407	1.5	4,545	18.8	57,766

Estimated reduction in yield of potatoes due to diseases, 1932

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases							
		Mosaic		Leaf Roll		Late Blight		Rhizoctonia	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Me.	40,460	3.	1,812	1.	604	15.	9,058	3.	1,812
N. H.	1,320	3.	50	3.	50	1.	17	1.	17
Vt.	2,320	-	-	-	-	-	-	-	-
Mass.	1,950	-	-	-	-	1.5	36	8.	193
R. I.	320	-	-	-	-	-	-	-	-
Conn.	1,980	0.5	10	-	-	0.5	10	0.3	6
N. Y.	28,350	5.	2,054	6.	2,465	t	-	4.	1,643
N. J.	7,155	-	-	-	-	-	-	-	-
Pa.	21,450	1.	367	14.	5,142	t	-	2.5	918
Ohio	11,583	1.5	216	5.	720	t	-	2.	288
Ind.	5,490	-	-	-	-	-	-	-	-
Ill.	4,860	-	-	-	-	-	-	-	-
Mich.	29,900	1.	340	1.	340	t	-	0.5	170
Wis.	22,620	t	-	0	0	0	0	1.	245
Minn.	29,562	5.	1,895	-	-	t	-	4.	1,516
Iowa	8,140	7.	679	-	-	0	0	5.	455
Mo.	5,600	-	-	-	-	0	0	-	-
N. D.	9,338	1.	99	1.	99	0	0	0.5	50
S. D.	5,110	-	-	-	-	0	0	-	-
Nebr.	8,775	-	-	-	-	0	0	-	-
Kans.	5,148	t	-	-	-	0	0	6.	345
Del.	516	-	-	-	-	-	-	-	-
Md.	2,852	3.	104	3.	104	1.5	52	4.	139
Va.	9,682	1.	105	7.	737	0	0	t	-
W. Va.	3,485	5.	311	10.	622	-	-	5.	311
N. C.	6,596	2.	150	t	-	t	-	t	-
S. C.	1,445	t	-	t	-	0	0	t	-
Ga.	1,003	-	-	-	-	-	-	-	-
Fla.	1,541	1.	17	0.5	8	2.	34	2.	34
Ky.	4,620	-	-	-	-	-	-	-	-
Tenn.	3,657	-	-	-	-	-	-	-	-
Ala.	2,484	-	-	-	-	-	-	-	-
Miss.	980	-	-	-	-	-	-	-	-
Ark.	2,627	5.	209	t	-	0	0	1.	42
La.	2,160	4.	94	t	-	0	0	t	-
Okla.	3,108	-	-	-	-	0	0	-	-
Tex.	4,154	0.5	23	0.1	4	0.5	23	1.	45
Mont.	2,244	5.	129	0	0	0	0	5.	129
Idaho	19,800	-	-	-	-	0	0	-	-
Wyo.	1,485	-	-	-	-	0	0	-	-
Colo.	11,000	2.	237	-	-	0	0	3.	355
N. M.	510	-	-	-	-	0	0	-	-
Ariz.	270	-	-	-	-	0	0	-	-
Utah	2,250	-	-	-	-	0	0	-	-
Nev.	300	-	-	-	-	0	0	-	-
Wash.	6,400	-	-	-	-	-	-	-	-
Oreg.	5,040	-	-	-	-	-	-	-	-
Calif.	6,369	-	-	2.	133	t	-	2.	133
U. S.	358,009	2.5	8,901	3.1	11,023	2.6	9,230	2.5	8,876

State	Estimated reduction in yield due to diseases											
	Blackleg		Fusarium Wilt		Tipburn and Hopperburn		Early Blight		Scab		All Diseases	
	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	1.	604	0	0	t	-	t	-	-	-	33.	19,929
N. H.	1.	17	-	-	10.	167	2.	33	-	-	21.	351
Vt.	-	-	-	-	-	-	-	-	-	-	-	-
Mass.	-	-	-	-	6.	144	3.	72	0.5	12	19.	457
R. I.	-	-	-	-	-	-	-	-	-	-	-	-
Conn.	0.3	6	0.3	6	1.	21	0.5	10	-	-	4.9	100
N. Y.	t	-	-	-	15.	6,163	1.	411	-	-	31.	12,736
N. J.	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	0.1	37	1.	367	20.	7,346	t	-	-	-	41.6	15,279
Ohio	0.4	58	0.2	29	8.	1,153	2.	288	-	-	19.6	2,824
Ind.	-	-	-	-	-	-	-	-	-	-	-	-
Ill.	-	-	-	-	-	-	-	-	-	-	-	-
Mich.	1.	340	-	-	1.	340	5.	1,699	-	-	12.	4,078
Wis.	0.2	49	0.5	123	5.	1,225	t	-	-	-	7.7	1,887
Minn.	1.	379	2.	758	5.	1,895	t	-	-	-	22.	8,338
Iowa	0.1	10	-	-	3.	291	-	-	-	-	16.1	1,562
Mo.	-	-	-	-	-	-	-	-	-	-	-	-
N. D.	1.	99	0.7	69	0.5	50	t	-	-	-	5.7	565
S. D.	-	-	-	-	-	-	-	-	-	-	-	-
Neb.	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	1.	58	-	-	-	-	-	-	1.5	86	10.5	604
Del.	-	-	-	-	-	-	-	-	-	-	-	-
Md.	0.5	17	2.	70	0.5	17	0.5	17	3.	104	18.	624
Va.	-	-	-	-	-	-	t	-	-	-	8.	842
W. Va.	2.	124	2.	124	15.	933	t	-	-	-	44.	2,736
N. C.	2.	150	-	-	2.	150	3.	225	-	-	12.	900
S. C.	-	-	-	-	-	-	t	-	-	-	t	-
Ga.	-	-	-	-	-	-	-	-	-	-	-	-
Fla.	t	-	-	-	-	-	0.5	8	0.5	8	8.5	143
Ky.	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	t	-	-	-	30.	1,251	t	-	-	-	37.	1,544
La.	t	-	-	-	1.	23	2.	47	-	-	8.	187
Okla.	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	-	-	0.5	23	1.	45	1.	45	-	-	8.	362
Mont.	t	-	3.	77	t	-	t	-	-	-	13.	335
Idaho	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	-	-	2.	237	-	-	-	-	-	-	7.	829
N. M.	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	-	-	-	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	-	-	-	-	-	-	-	-	-	-	10.	711
Oreg.	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	-	-	-	-	-	-	-	-	t	-	4.	266
U. S.	0.6	1,948	0.5	1,883	6.1	21,214	0.8	2,855	t	210	22.3	78,139

1933 - POTATOES

Estimated reduction in yield of potatoes due to diseases, 1933

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases: Mosaic %	Mosaic 1,000 Bushels	Leaf Roll %	Leaf Roll 1,000 Bushels	Late Blight %	Late Blight 1,000 Bushels	Rhizoctonia %	Rhizoctonia 1,000 Bushels
Maine	47,000	1.	469	2.	939	2.	939	4.5	2,112
N. H.	1,440	-	-	-	-	-	-	-	-
Vt.	1,950	-	-	-	-	-	-	-	-
Mass.	2,325	5.	179	5.	179	5.	179	8.	286
R. I.	370	-	-	-	-	-	-	-	-
Conn.	2,080	0.5	11	-	-	1.	22	-	-
N. Y.	24,600	-	-	-	-	-	-	-	-
N. J.	7,216	-	-	-	-	-	-	-	-
Pa.	21,357	3.	922	12.	3,687	0.5	154	3.	922
Ohio	8,064	1.5	151	5.	503	t	-	2.	201
Ind.	3,192	-	-	-	-	-	-	-	-
Ill.	1,584	-	-	-	-	-	-	-	-
Mich.	20,670	0.2	47	1.	236	0	0	1.	236
Wis.	16,730	t	-	t	-	0	0	0.5	94
Minn.	22,712	3.	908	-	-	0	0	3	908
Iowa	5,100	5.	287	-	-	-	-	5.	287
Mo.	2,[illegible]08	1.	30	-	-	-	-	1.5	45
N. D.	8,400	1.	89	1.	89	0	0	0.6	53
S. D.	2,480	-	-	-	-	-	-	-	-
Nebr.	8,625	-	-	-	-	-	-	-	-
Kans.	2,436	t	-	-	-	-	-	6.	162
Del.	444	0.5	2	-	-	-	-	t	-
Md.	2,700	2.5	90	2.5	90	2.	72	5.	130
Va.	3,649	3.	273	2.	132	0	0	t	-
W. Va.	2,331	3.	109	10.	364	t	-	4.	146
N. C.	7,315	1.	81	1.	81	t	-	1.	81
S. C.	1,744	-	-	-	-	-	-	-	-
Ga.	1,026	-	-	-	-	-	-	-	-
Fla.	2,232	1.	29	-	-	15.	438	4.	117
Ky.	4,092	-	-	-	-	-	-	-	-
Tenn.	3,762	-	-	-	-	-	-	-	-
Ala.	2,304	-	-	-	-	-	-	-	-
Miss.	306	-	-	-	-	-	-	-	-
Ark.	2,613	5.	134	t	-	0	0	1.	37
La.	2,337	-	-	-	-	-	-	-	-
Okla.	2,520	-	-	-	-	-	-	-	-
Tex.	3,648	1.	41	1.	41	0.1	4	2.	82
Mont.	1,955	5.	110	0	0	0	0	4.	68
Idaho	19,504	-	-	-	-	-	-	-	-
Wyo.	3,007	-	-	-	-	-	-	-	-
Colo.	13,050	-	-	-	-	-	-	-	-
N. M.	640	-	-	-	-	-	-	-	-
Ariz.	240	-	-	-	-	-	-	-	-
Utah	2,100	-	-	-	-	-	-	-	-
Nev.	250	-	-	-	-	-	-	-	-
Wash.	7,380	2.	155	1.	73	t	-	1.	78
Oreg.	6,435	12.	978	1.5	122	t	-	6.	489
Calif.	7,920	-	-	-	-	-	-	-	-
U. S.	317,143	2.1	5,145	2.7	6,591	0.8	1,808	2.7	6,604

State	Estimated reduction in yield due to diseases											
	Blackleg		Fusarium Wilt		Tipburn and: Hopperburn		Early Blight		Scab		All Diseases	
	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	1.	469	-	-	0	0	-	-	-	-	10.5	4,928
N. H.	-	-	-	-	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-	-	-	-	-
Mass.	1.	36	-	-	8.	286	3.	107	t	-	35.	1,252
R. I.	-	-	-	-	-	-	-	-	-	-	-	-
Conn.	1.	22	-	-	0.5	11	-	-	-	-	4.	88
N. Y.	-	-	-	-	-	-	-	-	-	-	-	-
N. J.	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	t	-	3.	922	5.	1,536	t	-	-	-	30.5	9,372
Ohio	0.4	40	0.2	20	8.	804	2.	201	0.5	50	19.8	1,990
Ind.	-	-	-	-	-	-	-	-	-	-	-	-
Ill.	-	-	-	-	-	-	-	-	-	-	-	-
Mich.	1.	236	1.	236	5.	1,178	0.5	118	2.	471	12.3	2,899
Wis.	t	-	0.5	94	5.	940	t	-	-	-	11.0	2,068
Minn.	-	-	-	-	10.	3,028	t	-	4.	1,211	25.	7,569
Iowa	-	-	-	-	-	-	-	-	1.	57	11.	631
Mo.	0.5	15	2.	61	-	-	-	-	1.	30	7.2	217
N. D.	1.	89	0.6	53	0.2	18	t	-	t	-	5.4	480
S. D.	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	t	-	-	-	-	-	-	-	2.	54	10.	270
Del.	-	-	-	-	t	-	t	-	-	-	0.5	2
Md.	0.5	18	5.	180	3.	108	0.5	18	3.5	126	25.	900
Va.	-	-	-	-	-	-	t	-	-	-	5.	455
W. Va.	1.0	36	3.	109	10.	364	t	-	-	-	36.	1,310
N. C.	1.	81	1.	81	2.	163	1.	81	-	-	10.	812
S. C.	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	-	-	-	-	-	-	-	-	-	-	-	-
Fla.	0.5	15	-	-	-	-	t	-	0.5	15	23.5	687
Ky.	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	t	-	0	0	20.	736	t	-	-	-	29.	1,067
La.	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	-	-	1.	41	1.	41	3.	123	-	-	11.1	455
Mont.	t	-	2.	44	t	-	t	-	-	-	11.	242
Idaho	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	-	-	-	-	-	-	-	-	-	-	-	-
N. Mex.	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	t	-	-	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-
ev.	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	t	-	t	-	t	-	t	-	-	-	5.	389
reg.	0.5	41	-	-	t	-	-	-	1.	81	21.	1,711
alif.	-	-	-	-	-	-	-	-	-	-	-	-
. S.	0.5	1,098	0.8	1,841	3.8	9,213	0.3	648	0.9	2,095	16.6	[illegible],794

1931 - TOMATOES FOR MANUFACTURE

Estimated reduction in yield of tomatoes for manufacture due to diseases, 193

State	Production *Tons	Estimated reduction in yield due to diseases									
		Leaf Spot		Fusarium Wilt		Early Blight		Mosaic		All Diseases	
		%	Tons	%	Tons	%	Tons	%	Tons	%	Tons
N. Y.	91,500	1.5	1,460	t	-	t	-	t	-	6.	5,840
N. J.	132,000	-	-	-	-	-	-	-	-	-	-
Pa.	17,300	-	-	-	-	-	-	-	-	-	-
Ohio	61,800	-	-	-	-	-	-	-	-	2.	1,261
Ind.	192,000	-	-	2.	4,085	2.	4,085	1.	2,043	6.	12,256
Ill.	22,300	-	-	-	-	-	-	-	-	-	-
Mich.	14,000	t	-	5.	375	t	-	-	-	20.	3,500
Wis.		1.5	-	t	-	t	-	-	-	2.5	-
Iowa	23,000	-	-	-	-	-	-	-	-	-	-
Mo.	34,200	1.5	540	2.	720	t	-	-	-	5.	1,800
Kans.		2.	-	3.	-	-	-	0.5	-	5.5	-
Del.	23,600	1.	240	0.5	120	t	-	-	-	1.5	360
Md.	76,000	0	0	0.5	539	7.	7,546	1.	1,078	29.5	31,801
Va.	26,600	0	0	5.	1,602	10.	3,205	-	-	17.	5,443
W. Va.		t	-	t	-	0	0	-	-	10.	-
Fla.		t	-	4.5	-	1.	-	-	-	15.5	-
Ky.	16,000	5.	870	-	-	3.	522	-	-	3.	1,392
Tenn.	23,500	-	-	-	-	-	-	-	-	-	-
Ark.	40,300	1.5	724	5.	2,413	t	-	-	-	16.5	7,963
Tex.		2.	-	3.	-	1.	-	-	-	11.	-
Colo.	17,500	-	-	-	-	-	-	-	-	-	-
Utah	51,500	-	-	0.5	270	-	-	-	-	4.5	2,427
Calif.	87,100	-	-	1.5	1,390	-	-	-	-	6.	5,560
**Other States	26,200										
U. S.	976,400	0.5	3,334	1.5	12,014	1.9	15,358	0.4	3,121	10.	79,608

*Short tons of 2,000 pounds.

**Including Connecticut, Georgia, Idaho, Kansas, Louisiana, Mississippi, Nebraska, New Mexico, Oklahoma, Oregon, South Carolina, Texas, Washington, West Virginia, Wisconsin, Florida.

1932 - TOMATOES FOR MANUFACTURE

Estimated reduction in yield of tomatoes for manufacture due to diseases, 1932

State	Production *Tons	Estimated reduction in yield due to diseases									
		Leaf Spot		Fusarium Wilt		Early Blight		Mosaic		All Diseases	
		%	Tons	%	Tons	%	Tons	%	Tons	%	Tons
Conn.		-	-	0.5	-	0.5	-	-	-	4.	-
N. Y.	87,700	t	-	t	-	2.	1,876	t	-	6.5	6,097
N. J.	186,000	3.	5,753	-	-	-	-	-	-	3.	5,753
Pa.	29,900	t	-	2.	664	t	-	7.	2,325	10.	3,321
Ohio	60,400	2.	1,260	0.1	63	1.	630	-	-	4.1	2,583
Ind.	248,000	-	-	-	-	-	-	-	-	-	-
Ill.	17,300	-	-	-	-	-	-	-	-	-	-
Mich.	11,000	t	-	3.	344	1.	115	-	-	4.	459
Wis.		1.5	-	t	-	t	-	-	-	2.5	-
Iowa	11,100	0.2	23	t	-	-	-	0.2	23	1.7	193
Mo.	28,000	-	-	-	-	-	-	-	-	-	-
Kans.		1.	-	2.	-	-	-	-	-	3.	-
Del.	45,600	-	-	-	-	-	-	-	-	-	-
Md.	154,800	2.	3,459	1.	1,730	2.	3,459	1.	1,730	10.5	18,161
Va.	38,900	10.	4,863	10.	4,863	t	-	-	-	20.	9,726
W. Va.		2.	-	5.	-	t	-	-	-	22.	-
S. C.		5.	-	t	-	2.	-	-	-	16.	-
Fla.		t	-	10.	-	10.	-	-	-	32.	-
Ky.	8,100	-	-	-	-	-	-	-	-	-	-
Tenn.	14,300	-	-	-	-	-	-	-	-	-	-
Ark.	45,000	1.	536	5.	2,679	5.	2,679	-	-	16.	8,573
La.		t	-	3.	-	2.	-	-	-	16.	-
Tex.		2.	-	1.	-	1.	-	-	-	9.1	-
Colo.	10,800	-	-	1.	113	t	-	-	-	4.	451
Utah	24,600	-	-	1.	266	-	-	-	-	7.5	1,995
Wash.		-	-	t	-	-	-	-	-	15.	-
Calif.	149,800	-	-	1.	1,569	-	-	-	-	4.5	7,059
**Other States	28,000	-	-	-	-	-	-	-	-	-	-
U. S.	1,199,300	1.8	15,894	1.4	12,291	1.0	8,759	0.5	4,078	7.4	64,371

*Short tons of 2,000 pounds.

**Including Connecticut, Georgia, Idaho, Kansas, Louisiana, Mississippi, Nebraska, New Mexico, Oklahoma, Oregon, South Carolina, Texas, Washington, West Virginia, Wisconsin, and Florida.

1933 - TOMATOES FOR MANUFACTURE

Estimated reduction in yield of tomatoes for manufacture due to diseases, 1933

State	Production *Tons	Estimated reduction in yield due to diseases									
		Leaf Spot		Fusarium Wilt		Early Blight		Mosaic		All Diseases	
		%	Tons	%	Tons	%	Tons	%	Tons	%	Tons
Conn.		0.5	-	-	-	0.5	-	-	-	6.	-
N. Y.	65,500	1.	712	t	-	1.5	1,068	t	-	8.	5,696
N. J.	89,100	-	-	-	-	-	-	-	-	-	-
Pa.	27,900	1.	300	1.	300	2.	600	-	-	7.	2,100
Ohio	70,600	2.	1,587	2.	1,587	0.5	397	-	-	11.	8,727
Ind.	212,000	t	-	0.1	217	0.5	1,083	-	-	2.1	4,548
Ill.	13,400	-	-	-	-	-	-	-	-	-	-
Mich.	18,500	0.5	96	3.	575	t	-	-	-	3.5	671
Wis.		1.5	-	t	-	t	-	-	-	2.5	-
Iowa	25,000	-	-	0.1	25	-	-	-	-	0.1	25
Mo.	42,000	2.5	1,160	5.	2,320	t	-	t	-	9.5	4,408
Kans.		t	-	2.	-	-	-	-	-	2.	-
Del.	21,200	0.5	107	t	-	-	-	-	-	0.5	107
Md.	98,800	0.5	716	0.2	286	1.5	2,148	0.5	716	31.	44,388
Va.	30,800	3.	1,004	5.	1,674	t	-	-	-	8.	2,678
W. Va.		2.	-	3.	-	t	-	0.5	-	10.5	-
Fla.		-	-	2.	-	-	-	-	-	8.	-
Ky.	8,800	-	-	-	-	-	-	-	-	-	-
Tenn.	21,100	-	-	-	-	-	-	-	-	-	-
Ark.	37,800	t	-	2.5	1,027	t	-	-	-	8.	3,286
Tex.		4.	-	3.	-	2.	-	-	-	20.	-
Colo.	9,500	-	-	-	-	-	-	-	-	-	-
Utah	31,700	-	-	2.	737	-	-	-	-	14.	5,160
Wash.		0	0	t	-	0	0	-	-	2.	-
Oreg.		-	-	-	-	-	-	-	-	2.	-
Calif.	135,000	-	-	0.5	699	-	-	-	-	3.5	4,896
** Other States	34,700	-	-	-	-	-	-	-	-	-	-
U. S.	993,400	0.6	5,682	1.	9,447	0.6	5,296	t	716	9.6	86,690

*Short tons of 2,000 pounds.

**Including Connecticut, Georgia, Idaho, Kansas, Louisiana, Mississippi, Nebrask New Mexico, Oklahoma, Oregon, South Carolina, Texas, Washington, West Virginia Wisconsin, Florida.

1931 - TOMATOES FOR MARKET

Estimated reduction in yield of tomatoes for market due to diseases, 1931

State	Production	Estimated reduction in yield due to diseases									
		Leaf Spot		Fusarium Wilt		Early Blight		Mosaic		All Diseases	
	1,000 *Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Mass.		1.	-	t	-	10.	-	0.5	-	12.5	-
N. Y.	638	1.5	10	t	-	t	-	t	-	6.	41
N. J.	1,710	-	-	-	-	-	-	t	-	-	-
Pa.	30	-	-	-	-	-	-	-	-	-	-
Ohio	433	-	-	-	-	-	-	-	-	2.	9
Ind.	792	-	-	2.	17	2.	17	1.	8	6.	50
Ill.	283	-	-	-	-	-	-	-	-	-	-
Mich.	272	t	-	5.	17	t	-	-	-	20.	68
Wis.		1.5	-	t	-	t	-	-	-	2.5	-
Minn.		t	-	-	-	-	-	4.	-	4.	-
Iowa	52	-	-	-	-	-	-	-	-	-	-
Mo.	559	1.5	9	2.	12	t	-	-	-	5.	30
N. D.		t	-	t	-	0.5	-	-	-	1.5	-
Kans.		2.	-	3.	-	-	-	0.5	-	5.5	-
Del.	14	1.	-	0.5	-	t	-	-	-	1.5	-
Md.	324	0	0	0.5	2	7.	32	1.	5	29.5	136
Va.	420	0	0	5.	25	10.	51	-	-	17.	86
W. Va.		t	-	t	-	0	0	-	-	10.	-
N. C.	90	t	-	2.	2	-	-	-	-	9.	9
S. C.	170	-	-	-	-	-	-	-	-	-	-
Ga.	60	-	-	-	-	-	-	-	-	-	-
Fla.	2,020	t	-	2.	46	1.	23	-	-	13.	301
Ky.	139	5.	10	-	-	3.	6	-	-	8.	16
Tenn.	310	-	-	-	-	-	-	-	-	-	-
Miss.	1,085	-	-	-	-	-	-	-	-	-	-
Ark.	280	1.5	5	5.	17	t	-	-	-	16.5	56
La.	147	-	-	-	-	-	-	-	-	-	-
Tex.	3,657	2.	82	3.	123	1.	41	-	-	11.	451
Colo.	369	-	-	-	-	-	-	-	-	-	-
Utah	88	-	-	0.5	-	-	-	-	-	4.5	4
Wash.	324	-	-	-	-	-	-	-	-	-	-
Oreg.	51	-	-	-	-	-	-	-	-	-	-
Calif.	1,809	-	-	1.5	29	-	-	-	-	6.	116
U. S.	16,726	0.9	116	2.2	290	1.3	170	0.1	13	10.6	1,373

*Bushels of 56 pounds.

1932 - TOMATOES FOR MARKET

Estimated reduction in yield of tomatoes for market due to diseases, 1932

State	Production 1,000 *Bushels	Estimated reduction in yield due to diseases									
		Leaf Spot		Fusarium Wilt		Early Blight		Mosaic		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
N. H.		-	-	-	-	10.	-	-	-	10.	-
Mass.		-	-	-	-	5.	-	-	-	5.	-
Conn.		-	-	0.5	-	0.5	-	-	-	4.	-
N. Y.	920	t	-	t	-	2.	20	t	-	6.5	64
N. J.	1,944	3.	60	-	-	-	-	-	-	3.	60
Pa.	150	t	-	2.	3	t	-	7.	12	10.	17
Ohio	440	2.	9	0.1	-	1.	5	-	-	4.1	19
Ind.	780	-	-	-	-	-	-	-	-	-	-
Ill.	424	-	-	-	-	-	-	-	-	-	-
Mich.	332	t	-	3.	10	1.	3	-	-	4.	13
Wis.		1.5	-	t	-	t	-	-	-	2.5	-
Minn.		t	-	0	0	t	-	-	-	3.	-
Iowa	72	0.2	-	t	-	-	-	0.2	-	1.7	1
Mo.	602	-	-	-	-	-	-	-	-	-	-
N. D.		t	-	t	-	t	-	-	-	3.5	-
Kans.		1.	-	2.	-	-	-	0.5	-	3.5	-
Del.	25	-	-	-	-	-	-	-	-	-	-
Md.	330	2.	7	1.	4	2.	7	1.	4	10.5	39
Va.	480	10.	60	10.	60	t	-	-	-	20.	120
W. Va.		2.	-	5.	-	t	-	-	-	22.	-
N. C.	104	1.	1	5.	7	1.	1	-	-	22.	29
S. C.	152	5.	9	-	-	2.	4	-	-	16.	29
Ga.	28	-	-	-	-	-	-	-	-	-	-
Fla.	2,255	t	-	10.	332	10.	332	-	-	32.	1,062
Ky.	250	-	-	-	-	-	-	-	-	-	-
Tenn.	972	-	-	-	-	-	-	-	-	-	-
Miss.	1,140	-	-	-	-	-	-	-	-	-	-
Ark.	250	1.	3	5.	15	5.	15	-	-	16.	48
La.	125	t	-	3.	4	2.	3	-	-	16.	23
Tex.	2,230	2.	49	1.	25	1.	25	-	-	9.1	224
Mont.		0	0	0	0	t	-	-	-	0.5	-
Colo.	432	-	-	1.	5	t	-	-	-	4.	19
Utah	67	-	-	1.	-	-	-	-	-	7.5	5
Wash.	307	0	0	t	-	0	0	-	-	15.	54
Oreg.	132	-	-	-	-	-	-	-	-	-	-
Calif.	2,499	-	-	1.	26	-	-	-	-	4.5	113
U. S.	17,642	1.3	198	3.2	491	2.8	415	0.1	16	12.9	1,944

*Bushels of 56 pounds.

1933 - TOMATOES FOR MARKET

Estimated reduction in yield of tomatoes for market due to diseases, 1933

		Estimated reduction in yield due to diseases									
State	Production 1,000 *Bushels	Leaf Spot %	Leaf Spot 1,000 Bushels	Fusarium Wilt %	Fusarium Wilt 1,000 Bushels	Early Blight %	Early Blight 1,000 Bushels	Mosaic %	Mosaic 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Maine		-	-	-	-	t	-	-	-	15.	-
Mass.		1.	-	t	-	8.	-	1.5	-	46.5	-
Conn.		0.5	-	-	-	0.5	-	-	-	6.	-
N. Y.	968	1.	11	t	-	1.5	16	t	-	8.	85
N. J.	1,350	-	-	-	-	-	-	-	-	-	-
Pa.	98	1.	1	1.	1	2.	2	-	-	7.	-
Ohio	408	2.	9	2.	9	0.5	2	-	-	11.	50
Ind.	600	t	-	0.1	1	0.5	3	-	-	2.1	13
Ill.	274	-	-	-	-	-	-	-	-	-	-
Mich.	403	0.5	2	3.	13	t	-	-	-	3.5	15
Wis.		1.5	-	t	-	t	-	-	-	2.5	-
Minn.		-	-	-	-	-	-	-	-	5.	-
Iowa	77	-	-	0.1	-	-	-	-	-	0.1	-
Mo.	588	2.5	16	5.	33	t	-	t	-	9.5	62
N. D.		-	-	t	-	-	-	-	-	2.5	-
Kans.		t	-	2.	-	-	-	-	-	2.	-
Del.	16	0.5	-	t	-	-	-	-	-	0.5	-
Md.	364	0.5	3	0.2	1	1.5	8	0.5	3	31.	164
Va.	315	3.	10	5.	17	t	-	-	-	8.	27
N. C.	75	t	-	10.	10	1.	1	-	-	25.	25
S. C.	80	-	-	-	-	-	-	-	-	-	-
Ga.	8	-	-	-	-	-	-	-	-	-	-
Fla.	2,345	-	-	2.	51	-	-	-	-	8.	204
Ky.	247	-	-	-	-	-	-	-	-	-	-
Tenn.	660	-	-	-	-	-	-	-	-	-	-
Miss.	927	-	-	-	-	-	-	-	-	-	-
Ark.	147	t	-	2.5	4	t	-	-	-	8.	13
La.	141	-	-	-	-	-	-	-	-	-	-
Tex.	2,622	4.	131	3.	98	2.	66	-	-	20.	656
Colo.	396	-	-	-	-	-	-	-	-	-	-
Utah	92	-	-	.5	-	-	-	-	-	12.5	13
Wash.	324	0	0	t	-	0	0	-	-	2.	7
Oreg.	101	-	-	-	-	-	-	-	-	2.	2
Calif.	1,870	-	-	.5	10	-	-	-	-	3.5	68
U. S.	15,496	1.4	183	1.9	248	0.8	98	t	3	11.	1,411

*Bushels of 56 pounds.

1931 - DRY BEANS

Estimated reduction in yield of dry beans due to diseases, 1931

State	Production 1,000 *Bags	Anthracnose %	Anthracnose 1,000 Bags	Bacterial Blight %	Bacterial Blight 1,000 Bags	Mosaic %	Mosaic 1,000 Bags	Root Rots %	Root Rots 1,000 Bags	All Disease %	All Disease 1,000 Bags
Maine	84	-	-	-	-	-	-	-	-	-	-
Vt.	24	-	-	-	-	-	-	-	-	-	-
N. Y.	1,296	1.	14	5.	70	2.	28	-	-	8.	11
Mich.	3,429	0	0	10.	385	t	-	t	-	11.	4
Wis.	17	1.	-	5.	1	1.	-	t	-	7.	
Minn.	27	t	-	2.	1	2.	1	t	-	5.	
Nebr.	63	-	-	-	-	-	-	-	-	-	-
Kans.	30	-	-	-	-	-	-	-	-	-	
Mont.	355	0	0	5.	19	2.	8	t	-	7.	
Idaho	2,083	0	0	-	-	6.	136	-	-	8.	1
Wyo.	377	0	0	5.	21	3.	12	t	-	8.	
Colo.	906	0	0	2.	19	3.	29	t	-	6.	
N. Mex.	644	0	0	-	-	-	-	-	-	-	
Ariz.	34	0	0	-	-	-	-	-	-	-	
Oreg.	7	0	0	-	-	7.5	1	-	-	7.5	
Calif.	3,467	0	0	-	-	t	-	-	-	-	
U. S.	12,843	0.1	14	5.5	516	2.3	215	t	-	8.9	8

*Bags of 100 pounds.

1932 - DRY BEANS

Estimated reduction in yield of dry beans due to diseases, 1932

State	Production 1,000 *Bags	Estimated reduction in yield due to diseases									
		Anthracnose		Bacterial Blight		Mosaic		Root Rots		All Diseases	
		%	1,000 Bags	%	1,000 Bags	%	1,000 Bags	%	1,000 Bags	%	1,000 Bags
laine	62	5.	3	1.	1	t	-	t	-	6.	4
't.	17	-	-	-	-	-	-	-	-	-	-
. Y.	855	1.	9	2.5	23	t	-	2.	18	4.5	50
lich.	4,455	t	-	5.	237	t	-	t	-	6.	284
/is.	23	0.5	-	3.	-	1.	-	t	-	4.5	1
inn.	25	t	-	1.	-	2.	1.	t	-	4.	1
ebr.	101	-	-	-	-	-	-	-	-	-	-
ans.	25	-	-	-	-	-	-	-	-	-	-
lont.	259	0	0	0.5	1	4.	11	2.	6	6.5	18
daho	1,060	0	0	-	-	8.	92	-	-	8.	92
/yo.	188	0	0	5.	10	4.	8	-	-	9.	18
olo.	438	0	0	40.	302	1.	8	1.	8	42.	318
I. Mex.	408	0	0	-	-	-	-	-	-	-	-
riz.	36	0	0	-	-	-	-	-	-	-	-
reg.	4	0	0	-	-	-	-	-	-	-	-
alif.	2,484	0	0	-	-	-	-	-	-	-	-
I. S.	10,440	0.1	12	7.	574	1.5	120	0.4	32	9.6	786

ags of 100 pounds.

1933 - DRY BEANS

Estimated reduction in yield of dry beans due to diseases, 1933

State	Production 1,000 *Bags	Estimated reduction in yield due to diseases									
		Anthracnose		Bacterial Blight		Mosaic		Root Rots		All Diseases	
		%	1,000 Bags	%	1,000 Bags	%	1,000 Bags	%	1,000 Bags	%	1,000 Bags
Maine	73	15.	13	-	-	-	-	-	-	15.	1
Vt.	16	-	-	-	-	-	-	-	-	-	-
N. Y.	842	0.5	6	30.	366	t	-	0.5	6	31.	37
Mich.	3,519	t	-	5.	185	t	-	t	-	5.	18
Wis.	20	t	-	3.	1	1.	-	t	-	4.	1
Minn.	29	-	-	-	-	-	-	-	-	-	-
Nebr.	115	-	-	-	-	-	-	-	-	-	-
Kans.	47	-	-	-	-	-	-	-	-	-	-
Mont.	336	0	0	3.	11	4.	14	t	-	7.	2
Idaho	1,670	0	0	-	-	10.	186	t	-	10.	18
Wyo.	313	0	0	3.	10	4.	13	t	-	7.	2
Colo.	1,138	0	0	10.	132	4.	53	t	-	14.	18
N. Mex.	598	0	0	-	-	-	-	-	-	-	-
Ariz.	38	0	0	-	-	-	-	-	-	-	-
Oreg.	6	0	0	-	-	10.	1	-	-	10.	
Calif.	3,520	0	0	-	-	-	-	-	-	-	-
U. S.	12,280	0.2	19	7.9	705	3.	267	t	6	11.1	99

*Bags of 100 pounds.

1931 - SNAP BEANS**

Estimated reduction in yield of snap beans due to diseases, 1931

State	Production 1,000 *Bushels	Anthracnose %	Anthracnose 1,000 Bushels	Bacterial Blight %	Bacterial Blight 1,000 Bushels	Mosaic %	Mosaic 1,000 Bushels	Root Rots %	Root Rots 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Maine	225	-	-	-	-	-	-	-	-	-	-
Mass.		3.	-	5.	-	t	-	t	-	10.	-
N. Y.	1,317	1.	18	5.	89	15.	267	5.	89	26.	463
N. J.	1,077	-	-	-	-	-	-	-	-	-	-
Pa.	457	-	-	-	-	-	-	-	-	-	-
Ind.	50	-	-	-	-	-	-	-	-	-	-
Ill.	38	-	-	-	-	-	-	-	-	-	-
Mich.	499	0	0	10.	56	t	-	t	-	11.	62
Wis.	717	1.	8	5.	39	1.	8	t	-	7.	55
Minn.		t	-	2.	-	2.	-	t	-	5.	-
Mo.		2.5	-	-	-	-	-	t	-	2.5	-
N. D.		t	-	-	-	1.	-	-	-	2.	-
Del.	240	t	-	t	-	-	-	-	-	0.5	1
Md.	1,523	0.5	8	1.	16	0.5	8	2.5	40	4.5	72
Va.	253	t	-	30.	129	2.	9	5.	21	41.	176
W. Va.		2.	-	5.	-	1.5	-	-	-	8.5	-
N. C.	635	-	-	-	-	-	-	1.	6	2.	12
S. C.	520	t	-	-	-	2.	12	10.	59	12.	71
Ga.	138	-	-	-	-	1.	1	-	-	1.	1
Fla.	3,376	2.	80	4.	161	1.	40	5.	201	16.	643
Tenn.	225	-	-	-	-	-	-	-	-	-	-
Ala.	63	-	-	-	-	-	-	-	-	-	-
Miss.	330	-	-	-	-	-	-	-	-	-	-
Ark.	188	t	-	1.	2	t	-	t	-	2.5	5
La.	831	-	-	-	-	-	-	-	-	-	-
Tex.	614	t	-	3.	20	1.	7	1.	7	10.	68
Mont.		0	0	5.	-	2.	-	-	-	7.	-
Idaho		0	0	-	-	5.	-	t	-	5.	-
Wyo.		0	0	1.	-	3.	-	t	-	4.	-
Colo.	474	0	0	40.	338	3.	25	t	-	44.	371
Utah	50	0	0	t	-	2.	1	-	-	2.	1
Wash.	150	0	0	-	-	-	-	-	-	-	-
Oreg.	133	0	0	-	-	7.5	11	-	-	7.5	11
Calif.	659	0	0	-	-	1.	7	-	-	1.	7
Other States	658	-	-	-	-	-	-	-	-	-	-
U. S.	15,440	0.9	114	6.4	850	3.	396	3.2	423	15.3	2,019

*Bushels 24 pounds.

**Includes snap beans for manufacture and for market.

1932 - SNAP BEANS**

Estimated reduction in yield of snap beans due to diseases, 1932

State	Production 1,000 *Bushels	Estimated reduction in yield due to diseases									
		Anthracnose		Bacterial Blight		Mosaic		Root Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	100	-	-	-	-	-	-	-	-	-	-
Conn.		0.5	-	-	-	-	-	-	-	1.	-
N. Y.	866	1.	10	2.5	26	8.	83	5.	52	16.5	171
N. J.	1,240	-	-	-	-	-	-	-	-	-	-
Pa.	341	5.	20	1.	4	2.	8	4.	16	13.	52
Ohio		0.5	-	0.5	-	1.	-	0.5	-	3.	-
Ind.	100	-	-	-	-	-	-	-	-	-	-
Ill.	60	-	-	-	-	-	-	-	-	-	-
Mich.	431	t	-	5.	33	30.	199	-	-	35.	232
Wis.	425	0.5	2	3.	13	1.	4	t	-	4.5	19
Minn.		t	-	-	-	2.	-	-	-	2.	-
Iowa		-	-	8.	-	1.	-	-	-	9.	-
N. D.		t	-	t	-	2.	-	-	-	3.	-
Del.	83	-	-	-	-	-	-	-	-	-	-
Md.	1,122	0.5	6	3.	36	1.	12	2.5	30	7.	84
Va.	454	0	0	0.5	2	2.	10	2.	10	5.5	27
W. Va.		5.	-	10.	-	2.	-	3.	-	25.	-
N. C.	546	0	0	t	-	t	-	1.	6	2.	12
S. C.	546	t	-	t	-	t	-	10.	64	15.	96
Ga.	165	-	-	-	-	-	-	-	-	-	-
Fla.	4,508	4.	231	3.	173	1.	58	8.	462	22.	1,272
Tenn.	157	-	-	-	-	-	-	-	-	-	-
Ala.	65	-	-	-	-	-	-	-	-	-	-
Miss.	421	-	-	-	-	-	-	-	-	-	-
Ark.	152	t	-	1.	2	t	-	t	-	2.5	5
La.	698	t	-	12.	102	t	-	6.	51	18.	153
Tex.	895	0.1	1	8.	94	3.	35	3.	35	24.1	283
Mont.		0	0	8.	-	2.	-	t	-	10.	-
Idaho		0	0	-	-	10.	-	t	-	10.	-
Wyo.		0	0	10.	-	2.	-	t	-	12.	-
Colo.	354	0	0	40.	240	1.	6	t	-	41.	246
Utah	67	0	0	2.	1	1.	1	t	-	3.	2
Wash.	67	0	0	0	0	5.	4	1.	1	6.	5
Oreg.	83	0	0	-	-	-	-	-	-	-	-
Calif.	755	0	0	-	-	t	-	t	-	t	-
Other States	292	-	-	-	-	-	-	-	-	-	-
U. S.	14,993	1.8	270	4.9	726	2.8	420	4.9	727	17.9	2,659

*Bushels 24 pounds.

**Includes snap beans for manufacture and market.

1933 - SNAP BEANS**

Estimated reduction in yield of snap beans due to diseases, 1933

State	Production 1,000 *Bushels	Anthracnose %	Anthracnose 1,000 Bushels	Bacterial Blight %	Bacterial Blight 1,000 Bushels	Mosaic %	Mosaic 1,000 Bushels	Root Rots %	Root Rots 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
laine	125	15.	22	-	-	-	-	-	-	15.	22
lass.		1.	-	5.	-	t	-	t	-	11.	-
onn.		-	-	-	-	-	-	-	-	1.	-
I. Y.	1,053	0.3	4	4.	48	8.	97	0.5	6	12.8	155
I. J.	1,300	-	-	-	-	-	-	-	-	-	-
'a.	418	5.	25	2.	10	0.5	3	8.	40	16.5	83
hio		2.1	-	0.5	-	-	-	-	-	4.6	-
nd.	117	-	-	-	-	-	-	-	-	-	-
ll.	40	-	-	-	-	-	-	-	-	-	-
ich.	535	t	-	5.	28	t	-	t	-	5.	28
is.	450	t	-	3.	14	1.	5	t	-	4.	19
owa		-	-	5.	-	-	-	-	-	5.	-
o.		1.5	-	-	-	-	-	t	-	1.7	-
. D.		t	-	t	-	2.	-	-	-	2.5	-
el.	128	0.5	-	-	-	-	-	0.5	-	1.	1
d.	1,142	0.1	1	2.	24	0.5	6	2.5	31	5.1	62
a.	232	0	0	2.	5	1.	2	2.	5	5.	12
. Va.		2.	-	2.	-	0.5	-	3.	-	9.	-
. C.	550	t	-	t	-	1.	6	5.	30	8.	48
. C.	293	t	-	3.	10	2.	7	10.	35	15.	52
a.	80	-	-	3.	3	2.	2	2.	2	7.	7
la.	5,002	11.	705	8.	513	-	-	3.	192	22.	1,410
enn.	147	-	-	-	-	-	-	-	-	-	-
la.	32	-	-	-	-	-	-	-	-	-	-
iss.	155	-	-	-	-	-	-	-	-	-	-
rk.	178	t	-	1.	2	t	-	t	-	2.5	5
a.	504	-	-	-	-	-	-	-	-	-	-
ex.	714	0.5	5	15.	148	5.	49	2.	20	27.5	271
ont.		-	-	2.	-	5.	-	t	-	7.	-
daho		-	-	-	-	10.	-	t	-	10.	-
yo.		-	-	2.	-	5.	-	t	-	7.	-
olo.	539	0	0	10.	63	5.	32	t	-	15.	95
tah	92	0	0	2.	2	-	-	-	-	2.	2
ash.	92	0	0	0	0	t	-	t	-	t	-
reg.	183	0	0	-	-	10.	20	-	-	10.	20
alif.	787	0	0	-	-	-	-	1.	8	1.	8
ther States	408	-	-	-	-	-	-	-	-	-	-
. S.	15,296	5.1	762	5.8	870	1.5	229	2.5	369	15.4	2,300

ushels 24 pounds.

Includes snap beans for manufacture and market.

1931 - COTTON

Estimated reduction in yield of cotton due to diseases, 1931

State	Production 1,000 Bales	Estimated reduction in yield due to diseases									
		Anthracnose		Angular Leaf Spot		Wilt		Root Knot		All Diseases	
		%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales
Mo.	270	3.	8	t	-	t	-	-	-	3.	8
Va.	43	-	-	-	-	-	-	-	-	-	-
N. C.	775	-	-	t	-	2.	17	2.	17	11.	9
S. C.	1,015	-	-	-	-	-	-	-	-	-	-
Ga.	1,395	-	-	-	-	-	-	-	-	-	-
Fla.	43	t	-	1.	-	5.	3	1.	-	10.	
Tenn.	605	-	-	-	-	-	-	-	-	-	-
Ala.	1,430	-	-	-	-	-	-	-	-	-	-
Miss.	1,725	-	-	-	-	-	-	-	-	-	-
Ark.	1,855	t	-	t	-	4.	82	2.	41	9.	18
La.	865	-	-	-	-	-	-	-	-	-	-
Okla.	1,220	-	-	-	-	-	-	-	-	-	-
Tex.	5,270	t	-	1.	65	5.	323	0.5	32	18.5	1,19
N. Mex.	98	-	-	-	-	-	-	-	-	-	-
Ariz.	119	-	-	-	-	-	-	-	-	-	-
Calif.	181	-	-	-	-	-	-	-	-	-	-
All Other	9	-	-	-	-	-	-	-	-	-	-
U. S.	16,918	t	8	0.6	65	4.4	425	0.9	90	15.3	1,488

1932 - COTTON

Estimated reduction in yield of cotton due to diseases, 1932

State	Production 1,000 Bales	Estimated reduction in yield due to diseases									
		Anthracnose		Angular Leaf Spot		Wilt		Root Knot		All Diseases	
		%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales
Mo.	285	-	-	-	-	-	-	-	-	-	-
Va.	28	1.	-	1.5	-	-	-	-	-	2.5	-
N. C.	640	0	0	1.	7	3.	21	5.	36	10.	71
S. C.	695	t	-	1.	7	1.	7	1.	7	7.	51
Ga.	845	-	-	-	-	-	-	-	-	-	-
Fla.	15	4.	-	2.	-	6.	-	-	-	16.	3
Tenn.	450	-	-	-	-	-	-	-	-	-	-
Ala.	930	-	-	-	-	-	-	-	-	-	-
Miss.	1,150	-	-	-	-	-	-	-	-	-	-
Ark.	1,360	t	-	t	-	4.	55	2.	28	9.	125
La.	610	1.5	10	t	-	4.	27	t	-	9.5	64
Okla.	1,080	-	-	-	-	-	-	-	-	-	-
Tex.	4,445	0.1	6	8.	465	3.	175	0.5	29	23.6	1,373
N. M.	76	-	-	-	-	-	-	-	-	-	-
Ariz.	82	-	-	-	-	-	-	-	-	-	-
Calif.	126	-	-	-	-	-	-	-	-	-	-
All Other	10	-	-	-	-	-	-	-	-	-	-
U. S.	12,727	0.2	16	5.1	479	3.	285	1.1	100	18.	1,687

1933 - COTTON

Estimated reduction in yield of cotton due to diseases, 1933

State	Production 1,000 Bales	Estimated reduction in yield due to diseases									
		Anthracnose		Angular Leaf Spot		Wilt		Root Knot		All Diseases	
		%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales
Mo.	245	2.5	6	0.5	1	0.2	1	t	-	3.2	8
Va.	38	3.	1	0.5	-	0.5	-	t	-	5.	2
N. C.	690	t	-	2.	16	5.	39	3.	23	11.	86
S. C.	742	-	-	-	-	-	-	-	-	-	-
Ga.	1,110	-	-	-	-	-	-	-	-	-	-
Fla.	27	-	-	-	-	-	-	-	-	-	-
Tenn.	460	-	-	-	-	-	-	-	-	-	-
Ala.	980	-	-	-	-	-	-	-	-	-	-
Miss.	1,180	-	-	-	-	-	-	-	-	-	-
Ark.	1,065	t	-	1.	12	5.	60	2.	24	11.	132
La.	486	-	-	-	-	-	-	-	-	-	-
Okla.	1,285	-	-	-	-	-	-	-	-	-	-
Tex.	4,475	0.1	6	10.	606	5.	303	1.	61	26.1	1,582
N. M.	86	-	-	-	-	-	-	-	-	-	-
Ariz.	82	-	-	-	-	-	-	-	-	-	-
Calif.	216	-	-	-	-	-	-	-	-	-	-
All Other	10	-	-	-	-	-	-	-	-	-	-
U. S.	13,177	0.2	13	7.6	635	4.8	403	1.3	108	21.7	1,810

1931 - SUGAR BEET

Estimated reduction in yield of sugar beet due to diseases, 1931

State	Production 1,000 Short Tons	Estimated reduction in yield due to diseases				
		Nematode	Curly Top	Leaf Spot	Phoma Rot	All Diseases
		%	%	%	%	%
Ohio		-	0	3.	3.	6.
Mich.	581	-	0	-	2.	2.
Nebr.	891	-	0	-	-	-
Tex.		0.5	0	1.	1.	12.5
Mont.	617	-	-	-	-	-
Idaho	301	-	-	-	-	-
Wyo.	552	-	-	-	-	-
Colo.	2,532	-	-	-	-	-
Utah	505	-	-	-	-	-
Calif.	1,060	-	-	-	-	-
Other States	864	-	-	-	-	-
U. S.	7,903	-	-	-	-	-

Not enough estimates to calculate U. S. loss

1932 - SUGAR BEET

Estimated reduction in yield of sugar beet due to diseases, 1932

State	Production 1,000 Short Tons	Estimated reduction in yield due to diseases				
		Nematode	Curly Top	Leaf Spot	Phoma Rot	All Diseases
		%	%	%	%	%
Ohio	259	0	0	1.	1.	2.5
Mich.	1,215	0	0	t	2.	4.
Wis.		0	0	t	t	0.3
Iowa		0	0	10.	8.	18.
Nebr.	877	-	-	-	-	-
Tex.		-	-	-	-	-
Mont.	739	-	-	-	-	t
Idaho	709	-	-	-	-	-
Wyoming	506	-	-	-	-	-
Colo.	1,777	1.	t	t	t	2.
Utah	846	-	-	-	-	-
Wash.		0	10.	0	1.	11.
Calif.	1,288	-	-	-	-	-
Other States	854	-	-	-	-	-
U. S.	9,070	-	-	-	-	-

Not enough estimates to calculate U. S. loss.

1933 - SUGAR BEET

Estimated reduction in yield of sugar beet due to diseases, 1933

State	Production: 1,000 Short Tons	Estimated reduction in yield due to diseases				
		Nematode	Curly Top	Leaf Spot	Phoma Rot	All Diseases
		%	%	%	%	%
Ohio	363	-	-	0.5	1.	1.5
Mich.	1,236	0	0	t	2.	2.5
Wis.		0	0	t	t	0.5
Iowa		-	-	-	-	-
Nebr.	1,068	-	-	-	-	-
Mont.	842	-	0	t	-	t
Idaho	862	-	-	-	-	-
Wyo.	609	-	-	-	-	-
Colo.	2,624	-	-	-	-	-
Utah	878	-	-	-	-	-
Wash.		0	1.	0	t	1.
Oreg.		-	2.	-	-	2.
Calif.	1,568	-	-	-	-	-
Other States	1,035	-	-	-	-	-
U. S.	11,085	-	-	-	-	-

Not enough estimates to calculate U. S. loss.

1931 - APPLE

Estimated reduction in yield of apples due to diseases, 1931

State	Production 1,000 Bushels	Bitter Rot %	Bitter Rot 1,000 Bushels	Black Rot %	Black Rot 1,000 Bushels	Blotch %	Blotch 1,000 Bushels	Rust %	Rust 1,000 Bushels	Blight %	Blight 1,000 Bushels	Scab %	Scab 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Maine	1,310	t	-	t	-	-	-	t	-	t	-	-	-	-	-
N. H.	578	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vt.	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mass.	1,713	1.	23	t	-	t	-	1.	23	t	-	12.	270	24.	541
R. I.	318	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conn.	675	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Y.	19,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. J.	3,520	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	14,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	14,790	2.	317	0.1	16	0.1	16	-	-	1.	159	3.	476	6.7	1,063
Ind.	3,990	0	0	0.5	20	0.5	20	-	-	0	0	1.	41	2.	81
Ill.	8,961	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mich.	9,620	0	0	0.5	51	0	0	t	-	0.5	51	5.	512	6.	614
Wis.	1,820	0	0	t	-	t	-	t	-	1.5	30	7.	139	8.5	169
Minn.	1,139	0	0	0	0	0	0	1.	12	t	-	1.5	18	4.5	54
Iowa	1,755	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mo.	8,000	1.5	155	1.	104	2.	207	1.	104	5.	518	9.	933	22.8	2,363
N. D.		-	-	-	-	-	-	t	-	1.5	-	-	-	2.	-
S. D.	11	-	-	-	-	-	-	4.	-	2.	-	1.	-	7.	1
Nebr.	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	2,020	-	-	-	-	-	-	2.	42	-	-	2.	42	4.	84
Del.	1,785	t	-	0.5	10	t	-	t	-	t	-	3.	62	13.5	278
Md.	3,582	1.5	62	4.	165	0.5	21	0.5	21	1.	41	3.	124	13.	537
Va.	21,889	0.6	149	2.	497	0.2	50	2.	497	0.2	50	3.	746	12.	2,984
W. Va.	12,954	0.5	72	t	-	0.5	72	0.5	72	t	-	1.	143	9.5	1,361
N. C.	5,475	4.	317	-	-	2.	159	-	-	5.	397	5.	397	31.	2,460
S. C.	374	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1931 - Apple (continued)

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases													
		Bitter Rot		Black Rot		Blotch		Rust		Blight		Scab		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Ga.	1,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ky.	5,390	0.5	28	0.2	11	0.2	11	-	-	-	-	-	-	2.	111
Tenn.	3,780	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	4,200	t	-	0.5	24	t	-	t	-	2.	94	2.5	118	11.	519
La.	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	215	t	-	t	-	1.	2	-	-	1.	2	-	-	12.	28
Mont.	434	0	0	0	0	0	0	0	0	t	-	t	-	t	-
Idaho	5,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	2,090	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Mex.	1,089	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utah	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	31,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oreg.	4,150	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	9,112	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	211,506	1.	1,123	0.8	898	0.5	558	0.7	771	1.2	1,342	3.5	4,021	11.6	13,248

1932 - APPLE

Estimated reduction in yield of apples due to diseases, 1932

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases													
		Bitter Rot		Black Rot		Blotch		Rust		Blight		Scab		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	2,575	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. H.	950	t	-	0.5	5	-	-	1.	10	t	-	1.	10	2.5	25
Vt.	1,090	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mass.	3,525	t	-	1.	42	-	-	2.	85	1.	42	5.	212	17.	721
R. I.	375	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conn.	1,420	0	0	0.5	7	-	-	0.5	7	0.5	7	1.5	22	3.5	50
N. Y.	22,197	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. J.	3,640	-	-	-	-	t	-	-	-	-	-	-	-	-	-
Pa.	9,537	0.5	78	4.	620	2.	310	1.	155	6.	930	20.	3,101	38.5	5,969
Ohio	5,145	3.	195	0.3	19	0.3	19	0.1	6	1.	65	15.	973	20.7	1,342
Ind.	871	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ill.	2,300	0.1	2	1.	24	2.	49	t	-	t	-	3.	73	6.1	148
Mich.	5,800	0	0	t	-	0	0	t	-	t	-	10.	644	10.	644
Wis.	1,914	0	0	t	-	t	-	t	-	1.5	33	12.	266	13.5	299
Minn.	660	0	0	t	-	0	0	t	-	t	-	3.	21	4.	28
Iowa	1,827	-	-	1.5	31	-	-	1.	21	2.	41	7.	144	11.5	237
Mo.	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. D.		-	-	-	-	-	-	t	-	1.5	-	0.3	-	2.	-
S. Dak.	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	627	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	546	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Del.	1,096	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Md.	1,368	2.	32	3.5	56	1.	16	0.5	8	1.	16	5.	80	14.	224
Va.	7,830	0.5	56	1.	111	t	-	2.	222	2.	222	20.	2,221	29.5	3,276
W. Va.	4,191	-	-	t	-	-	-	0.5	31	1.	61	15.	918	31.5	1,928
N. C.	1,825	t	-	t	-	1.	21	t	-	10.	215	1.	21	15.	321
S. C.	164	8.	18	1.	2	1.	2	2.	5	10.	22	5.	11	27.	60
Ga.	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1932 - Apple (continued)

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases: Bitter Rot %	Bitter Rot 1,000 Bushels	Black Rot %	Black Rot 1,000 Bushels	Blotch %	Blotch 1,000 Bushels	Rust %	Rust 1,000 Bushels	Blight %	Blight 1,000 Bushels	Scab %	Scab 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Ky.	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	936	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	252	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	1,368	0.5	7	0.5	7	t	-	t	-	2.	29	0.5	7	5.5	79
La.	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	387	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	135	0.1	-	1.	2	5.	8	-	-	1.	2	-	-	17.1	28
Mont.	562	-	-	-	-	-	-	-	-	t	-	0.5	3	1.	6
Idaho	4,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	2,139	-	-	-	-	-	-	-	-	t	-	-	-	t	-
N. Mex.	726	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utah	924	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	30,960	0	0	0	0	0	0	0	0	t	-	-	-	7.	2,330
Oreg.	4,950	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	9,045	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	140,775	0.4	388	0.9	926	0.4	425	0.5	550	1.7	1,685	8.6	8,727	17.4	17,715

1933 - APPLE

Estimated reduction in yield of apples due to diseases, 1933

State	Production	Estimated reduction in yield due to diseases													
	1,000 Bushels	Bitter Rot		Black Rot		Blotch		Rust		Blight		Scab		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	1,884	-	-	-	-	-	-	1.	22	-	-	10.	219	[illegible]	307
N. H.	1,131	-	-	-	-	-	-	1.	13	-	-	10.	135	16.	215
Vt.	1,027	-	-	-	-	-	-	1.	12	-	-	10.	122	16.	195
Mass.	3,486	0.5	22	1.	45	0	0	5.	225	3.	135	5.	225	22.5	1,012
R. I.	750	-	-	0.5	2	-	-	4.	17	-	-	4.	17	13.5	79
Conn.	1,184	-	-	0.5	6	0	0	3.	38	1.	13	2.	25	6.5	82
N. Y.	16,060	-	-	1.	187	0	0	2.	373	1.	187	5.	934	14.	2,615
N. J.	3,380	-	-	3.	123	t	-	0.5	20	1.	41	3.	123	17.5	717
Pa.	7,293	0.5	52	3.	310	1.	103	0.5	52	0.5	52	23.	2,379	29.5	3,051
Ohio	4,380	2.	103	0.2	10	0.3	15	0.1	5	0.5	26	12.	620	15.2	784
Ind.	819	0.5	9	0.5	9	1.	17	-	-	t	-	50.	853	52.	888
Ill.	2,112	t	-	t	-	3.	129	1.	43	2.	86	40.	1,724	51.	2,198
Mich.	8,651	0	0	t	-	0	0	0	0	t	-	25.	2,884	25.	2,884
Wis.	1,938	0	0	t	-	t	-	t	-	2.	45	12.	270	14.	315
Minn.	960	0	0	t	-	0	0	t	-	t	-	10.	108	11.	119
Iowa	1,425	0	0	t	-	1.	18	3.	53	1.	18	10.	178	20.	356
Mo.	3,132	1.5	65	1.5	65	3.	131	1.	44	3.	131	16.	696	28.	1,219
N. Dak.		0	0	0	0	-	-	0	0	1.5	-	-	-	2.5	-
S. Dak.	68	0	0	0	0	0	0	0	0	1.	1	1.	1	4.	3
Nebr.	370	0	0	1.	5	0.5	2	1.	5	2.	9	15.	69	20.	92
Kans.	1,431	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Del.	932	0.5	5	0.5	5	-	-	t	-	t	-	5.	50	6.	60
Md.	1,312	2.	35	2.5	43	1.	17	0.5	9	1.	17	15.	259	24.	415
Va.	10,900	1.	186	2.	373	t	-	8.	1,491	1.5	279	25.	4,658	41.5	7,732
W. Va.	4,200	0.5	32	1.	64	t	-	6.	385	2.	128	20.	1,282	34.5	2,212
N. C.	5,254	0.1	7	t	-	-	-	1.	68	15.	1,025	2.	137	23.1	1,579
S. C.	279	1.	4	1.	4	0	0	t	-	10.	36	2.	7	22.	80

1933 - Apple (continued)

State	Production	Estimated reduction in yield due to diseases													
	1,000	Bitter Rot		Black Rot		Blotch		Rust		Blight		Scab		All Diseases	
	Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Ga.	1,150	2.	31	1.	16	t	-	1.	16	10.	155	12.	186	26.	404
Ky.	2,340	1.	42	2.	85	5.	213	2.	85	5.	213	30.	851	45.	1,915
Tenn.	2,194	1.	35	3.	104	6.	209	2.	70	8.	279	12.	418	37.	1,289
Ala.	648	1.	9	2.	17	2.	17	t	-	5.	43	8.	68	24.	205
Miss.	174	1.	2	3.	7	1.	2	1.	2	10.	24	5.	12	26.	61
Ark.	1,925	1.	21	5.	107	t	-	t	-	2.	43	1.	21	10.	213
La.	22	1.	-	4.	1	t	-	1.	-	5.	1	1.	-	18.	5
Okla.	350	0	0	1.	4	1.	4	2.	8	5.	21	2.	8	16.	66
Tex.	98	0.1	-	1.	1	4.	5	-	-	3.	4	-	-	16.1	19
Mont.	525	0	0	0	0	0	0	0	0	t	-	1.5	8	1.5	8
Idaho	5,244	0	0	0	0	0	0	0	0	1.	56	0	0	6.	335
Wyo.	50	0	0	0	0	0	0	1.	1	1.	1	0	0	7.	5
Colo.	1,454	0	0	0	0	0	0	0	0	5.	84	0	0	13.	218
N. Mex.	285	-	-	-	-	-	-	-	-	4.	13	0	0	10.	32
Ariz.	51	-	-	-	-	-	-	-	-	2.	1	0	0	8.	4
Utah	313	-	-	-	-	-	-	-	-	3.	10	0	0	9.	31
Nev.	39	-	-	-	-	-	-	-	-	2.	1	0	0	8.	4
Wash.	29,240	0	0	0	0	0	0	0	0	t	-	t	-	5.	1,539
Oreg.	4,095	0	0	0	0	0	0	0	0	0.1	4	5.	223	8.1	361
Calif.	9,672	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	143,827	0.4	660	0.9	1,593	0.5	882	1.8	3,057	1.9	3,182	11.6	19,615	21.3	35,923

1931 - PEAR

Estimated reduction in yield of pear due to diseases, 1931

State	Production 1,000 Bushels	Estimated reduction in yield due to diseases							
		Blight		Scab		Leaf Blight		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	13	t	-	-	-	-	-	-	-
N. H.	12	-	-	-	-	-	-	-	-
Vt.	11	-	-	-	-	-	-	-	-
Mass.	46	2.	1	t	-	-	-	4.	2
R. I.	7	-	-	-	-	-	-	-	-
Conn.	18	-	-	-	-	-	-	-	-
N. Y.	805	-	-	-	-	-	-	-	-
N. J.	96	-	-	-	-	-	-	-	-
Pa.	448	-	-	-	-	-	-	-	-
Ohio	510	1.	5	3.	16	-	-	4.	2
Ind.	244	-	-	-	-	-	-	-	-
Ill.	765	-	-	-	-	-	-	-	-
Mich.	450	t	-	1.	5	t	-	1.	
Wis.	93	1.	1	3.5	3	0	0	4.5	
Mo.	539	12.	74	t	-	t	-	12.	7
Nebr.	35	-	-	-	-	-	-	-	-
Kans.	220	-	-	-	-	-	-	-	-
Del.	39	1.	-	-	-	2.	1	3.	
Md.	149	5.	9	5.	9	4.	7	14.	2
Va.	510	15.	91	t	-	t	-	16.	9
W. Va.	129	t	-	t	-	t	-	1.5	
N. C.	323	-	-	-	-	-	-	-	-
S. C.	118	-	-	-	-	-	-	-	-
Ga.	204	-	-	-	-	-	-	-	-
Fla.	59	10.	7	-	-	-	-	15.	1
Ky.	300	-	-	-	-	-	-	-	-
Tenn.	335	-	-	-	-	-	-	-	-
Ala.	357	-	-	-	-	-	-	-	-
Miss.	263	-	-	-	-	-	-	-	-
Ark.	210	-	-	-	-	-	-	-	-
La.	82	-	-	-	-	-	-	-	-
Okla.	95	-	-	-	-	-	-	-	-
Tex.	400	5.	24	-	-	-	-	15.	7
Idaho	56	-	-	-	-	0	0	-	-
Colo.	385	5.	20	-	-	0	0	5.	2
N. Mex.	53	-	-	-	-	0	0	-	-
Ariz.	15	-	-	-	-	0	0	-	-
Utah	49	-	-	-	-	0	0	-	-
Nev.	4	-	-	-	-	0	0	-	-
Wash.	3,650	-	-	-	-	0	0	-	-
Oreg.	1,995	-	-	-	-	0	0	-	-
Calif.	8,917	-	-	-	-	0	0	-	-
U. S.	23,009	6.4	232	0.9	33	0.2	8	9.1	33

1932 - PEAR

Estimated reduction in yield of pear due to diseases, 1932

State	Production: 1,000 Bushels	Blight %	Blight 1,000 Bushels	Scab %	Scab 1,000 Bushels	Leaf Blight %	Leaf Blight 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Me.	12	-	-	-	-	-	-	-	-
N. H.	12	t	-	2.	-	-	-	2.	-
Vt.	11	-	-	-	-	-	-	-	-
Mass.	63	3.	2	1.	1	t	-	19.	15
R. I.	10	-	-	-	-	-	-	-	-
Conn.	28	0.5	-	0.5	-	0.5	-	2.	1
N. Y.	1,745	-	-	-	-	-	-	-	-
N. J.	112	-	-	-	-	-	-	-	-
Pa.	384	20.	101	2.	10	t	-	24.	121
Ohio	313	1.	3	4.	13	t	-	5.1	17
Ind.	80	-	-	-	-	-	-	-	-
Ill.	71	t	-	t	-	-	-	t	-
Mich.	783	1.	8	0.5	4	t	-	1.5	12
Wis.		1.	-	3.5	-	0	0	4.5	-
Iowa	78	3.	2	-	-	-	-	3.	2
Mo.	51	-	-	-	-	-	-	-	-
Nebr.	38	-	-	-	-	-	-	-	-
Kans.	35	-	-	-	-	-	-	-	-
Del.	35	-	-	-	-	-	-	-	-
Md.	92	-	-	-	-	-	-	-	-
Va.	87	18.	19	t	-	t	-	19.	20
W. Va.	23	5.	1	-	-	t	-	10.	2
N. C.	113	-	-	-	-	-	-	-	-
S. C.	54	-	-	-	-	-	-	-	-
Ga.	106	-	-	-	-	-	-	-	-
Fla.	44	10	5	-	-	-	-	15.	8
Ky.	37	-	-	-	-	-	-	-	-
Tenn.	59	-	-	-	-	-	-	-	-
Ala.	132	-	-	-	-	-	-	-	-
Miss.	107	-	-	-	-	-	-	-	-
Ark.	34	-	-	-	-	-	-	-	-
La.	48	4.	2	0	0	0	0	5.	3
Okla.	46	-	-	-	-	-	-	-	-
Tex.	182	3.	6	-	-	-	-	13.	27
Idaho	60	-	-	-	-	0	0	-	-
Colo.	377	t	-	-	-	0	0	t	-
N. Mex.	44	-	-	-	-	0	0	-	-
Ariz.	15	-	-	-	-	0	0	-	-
Utah	76	-	-	-	-	0	0	-	-
Nev.	5	-	-	-	-	0	0	-	-
Wash.	3,723	t	-	t	-	0	0	1.	38
Oreg.	2,808	-	-	-	-	0	0	-	-
Calif.	9,917	-	-	-	-	0	0	-	-
U. S.	22,050	2.3	149	0.4	28	t	-	4.	266

1933 - PEAR

Estimated reduction in yield of pear due to diseases, 1933

State	Production: 1,000 Bushels	Blight %	Blight 1,000 Bushels	Scab %	Scab 1,000 Bushels	Leaf Blight %	Leaf Blight 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Me.	11	-	-	t	-	-	-	1.	-
N. H.	12	-	-	-	-	-	-	-	-
Vt.	7	-	-	-	-	-	-	-	-
Mass.	57	5.	3	1.	1	t	-	7.	5
R. I.	8	-	-	-	-	t	-	1.	-
Conn.	20	2.	-	1.	-	0.5	-	4.5	1
N.Y.	900	8.	83	2.	21	2.	21	13.	135
N. J.	71	10.	8	1.	1	2.	2	15.	13
Pa.	366	10.	43	1.	4	3.	13	15.	64
Ohio	336	0.5	2	5.	18	0	0	6.5	24
Ind.	100	10.	11	1.	1	0	0	12.	13
Ill.	320	12.	44	t	-	0	0	13.	48
Mich.	532	1.	6	2.	11	t	-	4.	23
Wis.		1.	-	3.5	-	0	0	4.5	-
Iowa	58	10.	7	-	-	0	0	11.	8
Mo.	146	4.	6	0.2	-	t	-	4.4	7
Nebr.	17	10.	2	-	-	0	0	11.	2
Kans.	90	10.	10	-	-	0	0	11.	11
Del.	20	10.	3	-	-	10.	3	21.	6
Md.	66	7.	6	5.	4	4.	3	17.	1
Va.	270	10.	30	t	-	t	-	11.	33
W. Va.	57	10.	7	-	-	3.	2	14.	10
N. C.	228	15.	43	-	-	4.	11	20.	57
S. C.	94	12.	13	-	-	2.	2	15.	16
Ga.	114	15.	22	-	-	5.	7	21.	30
Fla.	25	15.	5	-	-	-	-	16.	5
Ky.	80	15.	14	-	-	-	-	16.	1
Tenn.	94	15.	17	-	-	-	-	16.	18
Ala.	132	15.	24	-	-	-	-	16.	26
Miss.	85	20.	22	-	-	-	-	21.	2
Ark.	58	15.	10	-	-	-	-	16.	11
La.	31	15.	6	-	-	-	-	16.	6
Okla.	69	5.	4	-	-	-	-	6.	5
Tex.	104	2.	2	-	-	-	-	6.	6
Idaho	59	2.	1	-	-	0	0	3.	2
Colo.	271	3.	8	-	-	0	0	4.	11
N. Mex.	9	1.	-	-	-	0	0	2.	-
Ariz.	13	1.	-	-	-	0	0	2.	-
Utah	47	2.	1	-	-	0	0	3.	[illegible]
Nev.	4	1.	-	-	-	0	0	2.	-
Wash.	4,264	t	-	t	-	0	0	t	-
Oreg.	2,738	0.2	6	4.	118	0	0	7.2	21
Calif.	9,209	3.	288	-	-	0	0	4.	38
U. S.	21,192	3.4	757	0.8	179	0.3	64	5.6	1,24

1931 - PEACH

Estimated reduction in yield of peach due to diseases, 1931

State	Production 1,000 Bushels	Estimated reduction in yield due to diseases									
		Leaf Curl		Brown Rot		Yellows		Scab		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
N. H.	26	-	-	-	-	0	0	-	-	-	-
Mass.	153	1.	2	10.	18	t	-	t	-	13.	22
R. I.	41	-	-	-	-	-	-	-	-	-	-
Conn.	210	-	-	-	-	-	-	-	-	-	-
N. Y.	1,700	-	-	-	-	-	-	-	-	-	-
N. J.	2,200	-	-	-	-	-	-	-	-	-	-
Pa.	2,720	-	-	-	-	-	-	-	-	-	-
Ohio	2,500	4.	111	5.	139	-	-	1.	28	10.2	284
Ind.	1,470	-	-	-	-	-	-	-	-	15.	259
Ill.	4,300	-	-	-	-	-	-	-	-	-	-
Mich.	1,935	1.	20	0	0	2.	40	t	-	3.	60
Iowa	117	-	-	-	-	-	-	-	-	-	-
Mo.	1,500	0.8	13	2.	32	-	-	0.5	8	5.3	85
Nebr.	60	-	-	-	-	-	-	-	-	-	-
Kans.	350	-	-	-	-	-	-	-	-	-	-
Del.	500	t	-	2.	11	t	-	5.	27	8.	43
Md.	800	t	-	4.	34	0.5	4	1.	9	7.	60
Va.	1,600	t	-	2.	33	t	-	t	-	2.5	41
W. Va.	1,030	t	-	2.	23	t	-	3.	34	10.	114
N. C.	3,128	2.	86	5.	214	0	0	t	-	27.	1,157
S. C.	1,784	-	-	-	-	0	0	-	-	-	-
Ga.	9,134	0.1	9	1.	92	0	0	0.1	9	1.2	110
Fla.	92	-	-	-	-	0	0	15.	16	15.	16
Ky.	1,280	-	-	2.	27	0	0	2.	27	4.	54
Tenn.	2,820	-	-	-	-	0	0	-	-	-	-
Ala.	1,530	-	-	-	-	0	0	-	-	-	-
Miss.	1,060	-	-	-	-	0	0	-	-	-	-
Ark.	3,600	t	-	0.5	18	0	0	t	-	1.5	55
La.	352	-	-	-	-	0	0	-	-	-	-
Okla.	400	-	-	-	-	0	0	-	-	-	-
Tex.	1,581	0.1	2	2.	36	0	0	3.	55	13.1	239
Idaho	170	-	-	-	-	0	0	-	-	-	-
Colo.	1,130	-	-	-	-	0	0	-	-	-	-
N. Mex.	103	-	-	-	-	0	0	-	-	-	-
Ariz.	80	-	-	-	-	0	0	-	-	-	-
Utah	550	-	-	-	-	0	0	-	-	-	-
Nev.	3	-	-	-	-	0	0	-	-	-	-
Wash.	1,050	-	-	-	-	0	0	-	-	-	-
Oreg.	224	-	-	-	-	0	0	-	-	-	-
Calif.	24,460	-	-	-	-	0	0	-	-	-	-
U. S.	77,743	0.7	243	2.1	677	0.1	44	0.6	213	7.9	2,599

1932 - PEACH

Estimated reduction in yield of peach due to diseases, 1932

State	Production 1,000 Bushels	Leaf Curl		Brown Rot		Yellows		Scab		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
N. H.	20	0	0	0	0	-	-	t	-	t	-
Mass.	166	t	-	10.	19	t	-	1.	2	12.	2
R. I.	44	-	-	-	-	-	-	-	-	-	-
Conn.	215	-	-	3.	7	-	-	1.	2	4.5	1
N. Y.	1,663	-	-	10.	185	-	-	-	-	10.	18
N. J.	1,776	-	-	10.	197	-	-	-	-	10.	19
Pa.	1,676	15.	333	4.	89	0.5	11	3.	67	24.5	54
Ohio	814	5.	48	5.	48	0.1	1	5.	48	15.2	14
Ind.	106	-	-	-	-	-	-	-	-	-	-
Ill.	188	t	-	2.	4	t	-	t	-	2.	
Mich.	1,845	t	-	3.	60	5.	100	0.1	2	8.1	16
Iowa	76	1.	1	t	-	-	-	-	-	1.	
Mo.	102	-	-	-	-	-	-	-	-	-	-
Nebr.	58	-	-	-	-	-	-	-	-	-	-
Kans.	50	-	-	-	-	-	-	-	-	-	-
Del.	227	-	-	-	-	-	-	-	-	-	-
Md.	348	2.	8	5.	19	0.5	2	2.	8	10.5	4
Va.	324	-	-	-	-	-	-	-	-	-	-
W. Va.	143	t	-	t	-	t	-	t	-	10.	1
N. C.	1,645	1.	17	1.	17	-	-	2.	35	5.	8
S. C.	792	t	-	5.	45	-	-	1.	9	11.	9
Ga.	1,170	-	-	-	-	-	-	-	-	-	-
Fla.	28	t	-	1.	-	-	-	10.	3	15.	
Ky.	79	-	-	-	-	-	-	-	-	-	-
Tenn.	300	-	-	-	-	-	-	-	-	-	-
Ala.	221	-	-	-	-	-	-	-	-	-	-
Miss.	132	-	-	-	-	-	-	-	-	-	-
Ark.	352	t	-	t	-	-	-	t	-	2.	
La.	91	-	-	-	-	-	-	-	-	-	-
Okla.	280	-	-	-	-	-	-	-	-	-	-
Tex.	792	0.5	5	3.	28	-	-	3.	28	14.5	13
Idaho	178	-	-	-	-	0	0	-	-	-	-
Colo.	1,201	-	-	1.	12	0	0	-	-	1.	1
N. Mex.	44	-	-	-	-	0	0	-	-	-	-
Ariz.	83	-	-	-	-	0	0	-	-	-	-
Utah	748	-	-	-	-	0	0	-	-	-	-
Nev.	4	-	-	-	-	0	0	-	-	-	-
Wash.	1,320	5.	71	1.	14	0	0	0	0	7.	9
Oreg.	348	-	-	-	-	0	0	-	-	-	-
Calif.	22,794	-	-	-	-	0	0	-	-	-	-
U. S.	42,443	2.9	483	4.4	744	0.7	114	1.2	204	10.5	1,77

1933 - PEACH

Estimated reduction in yield of peach due to diseases, 1933

State	Production 1,000 Bushels	Estimated reduction in yield due to diseases									
		Leaf Curl		Brown Rot		Yellows		Scab		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
N. H.	18	-	-	2.	-	-	-	-	-	2.	-
Mass.	134	1.	1	4.	6	t	-	1.	1	6.	8
R. I.	26	2.	1	10.	3	-	-	-	-	12.	4
Conn.	172	3.	8	30.	85	-	-	1.	3	39.	110
N. Y.	1,092	10.	137	10.	137	-	-	-	-	20.	274
N. J.	987	5.	66	20.	263	-	-	-	-	25.	329
Pa.	1,144	10.	185	25.	461	1.	18	1.	18	38.	700
Ohio	456	15.	82	0.5	3	-	-	1.	5	16.7	91
Ind.	221	8.	21	4.	10	-	-	2.	5	14.	36
Ill.	1,522	8.	145	8.	145	-	-	-	-	16.	290
Mich.	215	10.	24	t	-	1.	2	1.	2	12.	28
Iowa	7	1.	-	10.	-	0	0	-	-	11.	-
Mo.	204	8.	18	1.5	3	0	0	0.5	1	11.	24
Nebr.	4	1.	-	5.	-	-	-	-	-	6.	-
Kans.	14	-	-	-	-	-	-	-	-	-	-
Del.	205	1.	2	3.	6	t	-	-	-	4.	8
Md.	400	2.5	11	7.	32	0.5	2	2.	9	12.	54
Va.	990	5.	56	5.	56	t	-	1.	11	11.	123
W. Va.	396	2.	9	8.	35	-	-	-	-	10.	44
N. C.	2,080	0.5	11	1.	22	-	-	1.	22	5.5	121
S. C.	1,633	t	-	10.	181	-	-	-	-	10.	181
Ga.	5,440	1.	61	10.	611	-	-	-	-	11.	672
Fla.	57	0	0	15.	10	-	-	-	-	15.	10
Ky.	232	5.	13	8.	21	-	-	-	-	13.	34
Tenn.	580	5.	34	10.	68	-	-	-	-	15.	102
Ala.	908	3.	31	10.	104	-	-	-	-	13.	135
Miss.	494	t	-	20.	124	-	-	-	-	20.	124
Ark.	672	1.	7	t	-	-	-	t	-	1.	7
La.	158	t	-	20.	40	-	-	-	-	20.	40
Okla.	102	1.	1	5.	5	-	-	-	-	6.	6
Tex.	782	2.	19	5.	48	-	-	5.	48	18.	172
Idaho	40	-	-	t	-	0	0	-	-	t	-
Colo.	578	-	-	t	-	0	0	-	-	t	-
N. Mex.	13	-	-	t	-	0	0	-	-	t	-
Ariz.	67	-	-	t	-	0	0	-	-	t	-
Utah	62	-	-	t	-	0	0	-	-	t	-
Nev.	2	-	-	t	-	0	0	-	-	t	-
Wash.	240	t	-	t	-	0	0	0	0	t	-
Oreg.	227	3.	7	4.	10	0	0	-	-	7.5	18
Calif.	22,752	-	-	-	-	0	0	-	-	-	-
U. S.	45,326	3.6	950	9.5	2,489	0.1	22	0.5	125	14.3	3,745

1931 - CHERRY

Estimated reduction in yield of cherry due to diseases, 1931

State	Production Short Tons	Estimated reduction in yield due to diseases		
		Brown Rot	Leaf Spot	All Diseases
		%	%	%
Mass.		4.	2.	7.
N. Y.	17,000	-	-	-
Pa.	7,600	-	-	-
Ohio	4,900	-	3.	-
Mich.	22,500	t	t	t
Wis.	6,000	t	0.5	1.
Minn.		t	2.	2.
Mo.		-	3.	3.
S. D.		-	1.	1.
Kans.		-	5.	5.
Del.		1.	0.5	2.5
Md.		1.	3.	5.
Va.		5.	t	5.
W. Va.		1.	2.	3.
N. C.		10.	-	10.
Ark.		t	1.	1.5
Tex.		2.	-	7.
Mont.	590	0	t	-
Idaho	3,000	-	-	-
Colo.	2,500	-	-	-
Utah	2,000	-	-	-
Wash.	10,000	-	-	-
Oreg.	9,000	-	-	-
Calif.	23,000	-	-	-
U. S.	108,090	-	-	-

Not enough estimates to calculate U. S. loss.

1932 - CHERRY

Estimated reduction in yield of cherry due to diseases, 1932

State	Production Short Tons	Estimated reduction in yield due to diseases					
		Brown Rot		Leaf Spot		All Diseases	
		%	Short Tons	%	Short Tons	%	Short Tons
Mass.		1.	-	t	-	5.	-
Conn.		2.5	-	0.5	-	3.	-
N. Y.	25,627	-	-	-	-	-	-
Pa.	9,150	20.	2,507	5.	627	27.	3,385
Ohio	3,240	2.	68	2.	68	4.1	139
Ill.		t	-	1.	-	1.	-
Mich.	23,380	2.	503	5.	1,257	7.	1,760
Wis.	6,864	t	-	5.	381	10.	762
Minn.		t	-	t	-	1.	-
W. Va.		5.	-	t	-	10.	-
N. C.		1.	-	-	-	2.	-
Ark.		t	-	1.	-	1.	-
Mont.	780	t	-	t	-	t	-
Idaho	3,402	-	-	-	-	-	-
Colo.	3,825	-	-	-	-	-	-
Utah	4,200	-	-	-	-	-	-
Wash.	16,125	t	-	t	-	2.	329
Oreg.	12,025	-	-	-	-	-	-
Calif.	18,500	-	-	-	-	-	-
U. S.	127,118	4.7	3,078	3.5	2,333	9.7	6,375

1933 - CHERRY

Estimated reduction in yield of cherry due to diseases, 1933

State	Production Short Tons	Estimated reduction in yield due to diseases					
		Brown Rot		Leaf Spot		All Diseases	
		%	Short Tons	%	Short Tons	%	Short Tons
Mass.		15.	-	t	-	16.	-
Conn.		2.	-	1.	-	3.	-
N. Y.	10,754	10.	1,208	1.	121	11.	1,329
N. J.		-	-	1.	-	1.	-
Pa.	4,375	20.	1,411	15.	1,058	38.	2,682
Ohio	2,806	2.	58	0.5	14	2.5	72
Mich.	25,697	t	-	15.	4,535	15.	4,535
Wis.	7,040	t	-	5.	371	5.	371
Mo.		t	-	6.	-	8.	-
Del.		5.	-	10.	-	15.	-
Md.		5.	-	3.	-	8.	-
Va.		t	-	5.	-	5.	-
W. Va.		10.	-	5.	-	15.	-
Mont.	735	0	0	t	-	t	-
Idaho	2,967	t	-	-	-	t	-
Colo.	1,976	t	-	-	-	t	-
Utah	3,078	t	-	-	-	t	-
Wash.	16,330	t	-	t	-	t	-
Oreg.	12,240	10.	1,654	2.	331	26.	4,301
Calif.	24,500	-	-	-	-	5.	1,289
U. S.	112,498	3.4	4,331	5.1	6,430	11.5	14,579

1931 -PLUM AND PRUNE

Estimated reduction in yield of plum and prune due to diseases, 1931

State	Estimated reduction in yield due to diseases	
	Brown Rot	All Diseases
	%	%
Massachusetts	15.	16.
Ohio	12.	12.1
Michigan	10.	11.
Wisconsin	1.	1.
Minnesota	1.	3.
Missouri	5.	8.
South Dakota	t	t
Delaware	0.5	1.
Maryland	5.	6.
Virginia	5.	5.
West Virginia	2.5	2.5
Arkansas	t	1.
Texas	3.	9.

Not enough estimates to calculate U. S. loss.

1932 - PLUM AND PRUNE

Estimated reduction in yield of plum and prune due to diseases, 1932

State	Estimated reduction in yield due to diseases	
	Brown Rot	All Diseases
	%	%
Massachusetts	10.	12.
Connecticut	2.5	3.
Pennsylvania	10.	16.
Ohio	10.	10.1
Illinois	3.	3.
Michigan	5.	6.
Wisconsin	1.	1.
Minnesota	1.	3.
Iowa	2.	2.1
North Dakota	-	2.5
Virginia	5.	10.
Arkansas	t	2.
Texas	3.	10.
Montana	0	t
Washington	5.	6.

Not enough estimates to calculate U. S. loss.

1933 - PLUM AND PRUNE

Estimated reduction in yield of plum and prune due to diseases, 1933

State	Estimated reduction in yield due to diseases	
	Brown Rot	All Diseases
	%	%
Maine	5.	6.
Massachusetts	6.	6.
Connecticut	1.	2.
New York	15.	15.
New Jersey	25.	25.
Pennsylvania	15.	20.
Ohio	8.	8.1
Michigan	15.	15.
Wisconsin	1.	1.
Missouri	5.	5.5
North Dakota	0	2.
Delaware	5.	5.
Maryland	7.	8.
Virginia	10.	11.
Arkansas	t	1.
Texas	5.	15.
Montana	0	t
Washington	3.	3.
Oregon	15.	22.

Not enough estimates to calculate U. S. loss.

1931 - GRAPE

East of Great Plains

Estimated reduction in yield of grape due to diseases, 1931

State	Production	Estimated reduction in yield due to diseases			
	Tons	Black Rot		All Diseases	
		%	Tons	%	Tons
Maine	28	-	-	-	-
New Hampshire	50	-	-	-	-
Vermont	44	-	-	-	-
Massachusetts	384	20.	110	30.	165
Rhode Island	250	-	-	-	-
Connecticut	1,295	-	-	-	-
New York	98,700	-	-	-	-
New Jersey	3,088	-	-	-	-
Pennsylvania	33,950	-	-	-	-
Ohio	26,600	3.	835	4.5	1,253
Indiana	3,400	-	-	-	-
Illinois	6,800	-	-	-	-
Michigan	53,100	0	0	t	-
Wisconsin	380	0.5	2	1.	4
Minnesota	330	t.	-	1.	3
Iowa	6,700	-	-	-	-
Missouri	10,280	3.	320	3.7	395
Nebraska	2,360	-	-	-	-
Kansas	4,500	-	-	-	-
Delaware	2,164	1.5	35	6.5	151
Maryland	682	4.	28	4.	28
Virginia	1,980	5.	116	15.	349
West Virginia	1,304	3.	63	38.	799
North Carolina	4,620	10.	544	15.	816
South Carolina	1,031	-	-	-	-
Georgia	869	-	-	-	-
Florida	1,010	5.	59	14.	165
Kentucky	1,090	4.	45	4.	45
Tennessee	1,215	-	-	-	-
Alabama	720	-	-	-	-
Mississippi	281	-	-	-	-
Arkansas	10,000	0.5	50	0.5	50
Louisiana	57	-	-	-	-
Oklahoma	2,550	-	-	-	-
Texas	1,840	5.	115	20.	460
Total	283,652	1.9	2,322	3.9	4,683

1932 - GRAPE
East of Great Plains
Estimated reduction in yield of grape due to diseases, 1932

State	Production	Estimated reduction in yield due to diseases			
		Black Rot		All Diseases	
	Tons	%	Tons	%	Tons
Maine	24	-	-	-	-
New Hampshire	43	t	-	t	-
Vermont	42	-	-	-	-
Massachusetts	334	10.	42	20.	84
Rhode Island	237	-	-	-	-
Connecticut	1,226	1.	13	4.	51
New York	67,971	-	-	-	-
New Jersey	3,230	-	-	-	-
Pennsylvania	22,977	3.	726	5.	1,210
Ohio	30,705	4.	1,293	5.	1,616
Indiana	3,108	-	-	-	-
Illinois	6,000	2.	124	3.	186
Michigan	71,220	t	-	t	-
Wisconsin	396	0.4	2	0.8	4
Minnesota	327	t	-	1.	3
Iowa	7,650	t	-	0.1	8
Missouri	9,717	-	-	-	-
Nebraska	2,960	-	-	-	-
Kansas	4,810	-	-	-	-
Delaware	2,352	-	-	-	-
Maryland	625	-	-	-	-
Virginia	1,488	10.	165	10.	165
West Virginia	1,008	10.	134	25.	336
North Carolina	3,431	2.	71	4.	142
South Carolina	750	5.	40	6.	48
Georgia	630	-	-	-	-
Florida	454	15.	97	30.	194
Kentucky	1,035	-	-	-	-
Tennessee	1,005	-	-	-	-
Alabama	509	-	-	-	-
Mississippi	178	-	-	-	-
Arkansas	12,936	0.5	77	15.5	2,373
Louisiana	42	-	-	-	-
Oklahoma	3,440	-	-	-	-
Texas	1,809	10.	241	25.	603
Total	264,669	1.8	3,025	4.2	7,023

1933 - GRAPE
East of Great Plains
Estimated reduction in yield of grape due to diseases, 1933

State	Production Tons	Estimated reduction in yield due to diseases			
		Black Rot		All Diseases	
		%	Tons	%	Tons
Maine	24	t	-	t	-
New Hampshire	43	-	-	-	-
Vermont	31	-	-	-	-
Massachusetts	353	15.	63	16.	67
Rhode Island	207	-	-	-	-
Connecticut	1,240	2.	26	3.	39
New York	64,800	-	-	-	-
New Jersey	2,535	-	-	-	-
Pennsylvania	17,808	10.	2,024	12.	2,429
Ohio	27,412	4.	1,154	5.	1,443
Indiana	2,590	-	-	-	-
Illinois	5,986	-	-	-	-
Michigan	58,565	t	-	1.	592
Wisconsin	357	0.5	2	1.	4
Minnesota	307	-	-	-	-
Iowa	6,624	-	-	-	-
Missouri	9,880	1.5	154	4.	411
Nebraska	1,824	-	-	-	-
Kansas	4,158	-	-	-	-
Delaware	2,448	10.	272	10.	272
Maryland	596	6.	38	7.	44
Virginia	1,666	15.	312	20.	416
West Virginia	990	10.	132	25.	330
North Carolina	4,661	2.	98	5.	245
South Carolina	958	-	-	-	-
Georgia	759	-	-	-	-
Florida	767	-	-	-	-
Kentucky	1,174	-	-	-	-
Tennessee	1,155	-	-	-	-
Alabama	625	-	-	-	-
Mississippi	231	-	-	-	-
Arkansas	12,120	5.	638	5.	638
Louisiana	41	-	-	-	-
Oklahoma	2,610	-	-	-	-
Texas	1,820	15.	355	23.	544
Total	237,365	3.6	5,268	5.1	7,474

1931 - RASPBERRY

Estimated reduction in yield of raspberries due to diseases, 1931

State	Estimated reduction in yield due to diseases		
	Mosaic and Leaf Curl	Other Diseases	All Diseases
	%	%	%
Massachusetts	20.	15.	35.
Indiana	-	3.	3.
Michigan	5.	5.	10.
Wisconsin	3.	2.	5.
Minnesota	4.	5.	9.
Missouri	-	6.3	6.3
North Dakota	1.	1.	2.
Kansas	1.5	3.	4.5
Deleware	t	1.	1.
Maryland	2.	9.	11.
Virginia	2.	10.	12.
West Virginia	5.	5.	10.
Arkansas	1.	4.	5.
Texas	0.5	10.	10.5
Montana	2.	-	2.

1932 - RASPBERRY

Estimated reduction in yield of raspberries due to diseases, 1932

State	Estimated reduction in yield due to diseases		
	Mosaic and Leaf Curl	Other Diseases	All Diseases
	%	%	%
New Hampshire	5.	-	5.
Massachusetts	15.	15.	30.
Connecticut	2.	1.	3.
Pennsylvania	12.	26.	38.
Ohio	10.	10.	20.
Illinois	t	10.	10.
Michigan	5.	5.	10.
Wisconsin	3.	2.	5.
Minnesota	4.	3.	7.
Iowa	5.	3.	8.
North Dakota	1.	1.	2.
Kansas	1.	3.5	4.5
Virginia	5.	10.	15.
West Virginia	5.	10.	15.
Arkansas	4.	1.	5.
Texas	0.5	10.	10.5
Montana	1.	-	1.
Colorado	t	-	t
Washington	5.	2.	7.

1933 - RASPBERRY

Estimated reduction in yield of raspberries due to diseases, 1933

State	Estimated reduction in yield due to diseases		
	Mosaic and Leaf Curl	Other Diseases	All Diseases
	%	%	%
Maine	10.	-	10.
Massachusetts	15.	20.	35.
Connecticut	2.	1.5	3.5
Pennsylvania	15.	20.	35.
Ohio	16.	5.	21.
Michigan	5.	10.	15.
Wisconsin	3.	2.	5.
Minnesota	3.	3.	6.
Missouri	0	4.5	4.5
North Dakota	1.	1.	2.
Kansas	-	4.	4.
Maryland	3.	10.	13.
Virginia	10.	10.	20.
West Virginia	10.	11.	21.
North Carolina	5.	1.	6.
Arkansas	4.	1.	5.
Texas	1.	15.	16.
Montana	2.	-	2.
Washington	1.	2.	3.
Oregon	0	20.	20.

1931 - STRAWBERRY

Estimated reduction in yield of strawberries due to diseases, 1931

State	Production: 1,000 Crates	Estimated reduction in yield due to diseases											
		Leaf Spot		Leaf Scorch		Dwarf		Black Root and: Root Rots		All Diseases		Fruit Rots	
		%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates
Mass.		4.	-	-	-	t	-	5.	-	9.	-	8.	-
N. Y.	492	-	-	-	-	0	0	-	-	-	-	-	-
N. J.	400	-	-	-	-	0	0	-	-	-	-	-	-
Pa.	248	-	-	-	-	0	0	-	-	-	-	-	-
Ohio	208	0.1	-	-	-	0	0	-	-	0.1	-	-	-
Ind.	112	t	-	-	-	-	-	0.2	-	0.2	-	-	-
Ill.	205	-	-	-	-	-	-	-	-	-	-	-	-
Mich.	429	t	-	t	-	0	0	t	-	-	-	-	-
Wis.	200	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	176	-	-	-	-	-	-	-	-	-	-	-	-
Mo.	474	2.	10	-	-	-	-	-	-	2.	10	17.8	84
Kans.	48	-	-	-	-	-	-	-	-	-	-	-	-
Del.	140	-	-	-	-	-	-	-	-	-	-	-	-
Md.	258	-	-	-	-	-	-	-	-	-	-	-	-
Va.	370	-	-	-	-	-	-	-	-	-	-	-	-
N. C.	678	2.	17	2.	17	10.	86	5.	43	21.	180	3.	20
S. C.	27	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	20	-	-	-	-	-	-	-	-	-	-	-	-
Fla.	655	0.5	4	0.5	4	1.5	11	2.	15	10.	74	25.	164
Ky.	194	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	590	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	424	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	105	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	531	-	-	-	-	-	-	-	-	-	-	-	-
La.	1,870	15.	351	5.	117	t	-	t	-	20.	468	0.5	9
Okla.	28	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	136	1.	1	1.	1	0	0	-	-	2.	2	1.	1
Utah	60	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	528	-	-	-	-	-	-	-	-	-	-	-	-
Oreg.	695	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	855	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	11,156	7.	383	2.5	139	1.8	97	1.1	58	13.4	734	7.3	278

Estimated reduction in yield of strawberries due to diseases, 1932

State	Production: 1,000 Crates	Estimated reduction in yield due to diseases: Leaf Spot %	Leaf Spot 1,000 Crates	Leaf Scorch %	Leaf Scorch 1,000 Crates	Dwarf %	Dwarf 1,000 Crates	Black Root and Root Rots %	Black Root and Root Rots 1,000 Crates	All Diseases %	All Diseases 1,000 Crates	Fruit Rots %	Fruit Rots 1,000 Crates
Mass.		1.	-	-	-	t	-	8.	-	9.	-	7.5	-
N. Y.	521	-	-	-	-	0	0	-	-	-	-	-	-
N. J.	678	-	-	-	-	0	0	-	-	-	-	-	-
Pa.	276	-	-	-	-	0	0	-	-	-	-	-	-
Ohio	280	0.1	-	-	-	0	0	-	-	0.1	-	-	-
Ind.	159	-	-	-	-	-	-	-	-	-	-	-	-
Ill.	333	-	-	-	-	-	-	-	-	-	-	-	-
Mich.	396	-	-	-	-	-	-	-	-	-	-	-	-
Wis.	235	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	218	-	-	-	-	-	-	-	-	-	-	-	-
Mo.	685	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	57	-	-	-	-	-	-	-	-	-	-	-	-
Del.	324	-	-	-	-	-	-	-	-	-	-	-	-
Md.	608	-	-	-	-	-	-	-	-	-	-	-	-
Va.	413	-	-	-	-	-	-	-	-	-	-	-	-
N. C.	496	4.	26	2.	13	10.	64	5.	32	23.	148	10.	50
S. C.	32	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	17	-	-	-	-	-	-	-	-	-	-	-	-
Fla.	616	0.5	4	0.5	4	1.5	11	2.	14	14.	101	13.	80
Ky.	479	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	705	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	280	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	128	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	1,040	-	-	-	-	-	-	-	-	-	-	-	-
La.	1,504	15.	293	8.	156	-	-	-	-	23.	449	-	-
Okla.	51	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	126	-	-	-	-	-	-	-	-	-	-	-	-
Utah	100	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	736	-	-	-	-	-	-	-	-	-	-	-	-
Oreg.	970	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	906	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	13,369	9.	323	4.3	173	2.1	75	1.3	46	19.5	698	-	130

1933 - STRAWBERRY

Estimated reduction in yield of strawberries due to diseases, 1933

State	Production: 1,000 Crates	Estimated reduction in yield due to diseases											
		Leaf Spot		Leaf Scorch		Dwarf		Black Root and: Root Rots		All Diseases		Fruit Rots	
		%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates
N. Y.	457	-	-	-	-	0	0	-	-	-	-	-	-
N. J.	630	-	-	-	-	0	0	-	-	-	-	-	-
Pa.	239	-	-	-	-	0	0	-	-	-	-	-	-
Ohio	250	0.1	-	-	-	0	0	-	-	0.1	-	-	-
Ind.	183	-	-	-	-	-	-	-	-	-	-	-	-
Ill.	420	-	-	-	-	-	-	-	-	-	-	-	-
Mich.	361	-	-	-	-	0	0	-	-	-	-	-	-
Wis.	195	-	-	t	-	0	0	-	-	-	-	-	-
Minn.		-	-	-	-	0	0	50.	-	50.	-	-	-
Iowa	145	-	-	-	-	0	0	-	-	-	-	-	-
Mo.	622	1.	6	-	-	-	-	-	-	2.	12	4.	25
Kans.	45	-	-	-	-	0	0	-	-	-	-	-	-
Del.	468	-	-	-	-	-	-	-	-	-	-	-	-
Md.	846	-	-	-	-	-	-	-	-	-	-	-	-
Va.	595	-	-	-	-	5.	35	10.	70	15.	105	-	-
N. C.	650	3.	25	2.	17	10.	83	5.	42	22.	184	6.	39
S. C.	44	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	24	-	-	-	-	-	-	-	-	-	-	-	-
Fla.	784	1.	9	0.5	5	3.	28	2.	18	15.	138	5.	39
Ky.	450	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	1,000	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	334	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	124	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	800	-	-	-	-	-	-	-	-	-	-	-	-
La.	1,248	15.	234	5.	78	-	-	-	-	20.	312	8.	100
Okla.	50	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	80	-	-	-	-	-	-	-	-	-	-	-	-
Utah	93	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	360	-	-	-	-	-	-	-	-	-	-	-	-
Oreg.	297	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	924	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	12,718	5.6	274	2.	100	3.	146	2.7	130	15.4	751	6.1	203

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THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

Supplement 88

Fruit and Vegetable Losses
In Market and Kitchen Caused by Plant Disease

September 15, 1935

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

FRUIT AND VEGETABLE LOSSES
IN MARKET AND KITCHEN CAUSED BY PLANT DISEASES [1]

Paul R. Miller [2]

Plant Disease Reporter
Supplement 88
September 15, 1935

Because of the dearth of information as to the losses which occur while fruits and vegetables are in the hands of the distributors and ultimate consumers, a survey beginning December 1, 1933, is being made in an attempt to estimate such losses by product and cause. The methods for arriving at these estimates and the results obtained are set forth in the following pages.

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Orientation 2
Methods of obtaining and recording losses sustained by distributors.................. 9
Methods of obtaining and recording losses sustained by consumers.................... 11
Estimates of loss 15
Discussion 23

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[1] Preliminary report based upon a survey being conducted by the Plant Disease Survey at Knoxville, Tennessee.

[2] Grateful acknowledgment is made to Dr. C. D. Sherbakoff, Plant Pathologist, Agricultural Experiment Station, University of Tennessee, for his identification of numerous diseases of fruits and vegetables and for providing office space and access to the laboratory. Considerable credit is due H. S. Duncan and Lofton Davidson, students of the University of Tennessee, who assisted in this project under the FERA provision. Appreciation is extended to all the fruit and vegetable dealers and consumers who kept records and cooperated so heartily in the survey.

Orientation

After a preliminary survey, the purpose of which was to get acquainted with the various agencies concerned with the distribution of fruits and vegetables and to solicit their cooperation in the proposed project, it was deemed advisable to have figures on the approximate volume of this produce coming into the city annually. Since this information was not available elsewhere it was obtained by going through the daily incoming consignment books of the railroad freight offices, selecting the carlot shipments of fruits and vegetables from other material and recording by origin and product as well as date and product. It was thought that knowing where the various products were grown would facilitate diagnosis of the cause for loss and that knowing when to expect seasonal products would help in planning the survey so as to inspect the greatest quantity. These compilations for the years 1933 and 1934 follow. A graphic presentation of this information is also shown. (See Figure 1 and Tables 1, 2, 3 and 4.)

In order to obtain an estimate of the amount of produce entering the city by truck, charts were prepared which listed in one column the various fruits and vegetables and in parallel columns the date of purchase, origin of product, amount bought annually, and amount received by truck. These were taken to all dealers concerned. Estimates made by the dealers were converted into car lot equivalents and could then be checked by subtracting their actual car lot consignments from the total amount received. These figures showed that approximately 50 per cent of the fruits and vegetables received are hauled by truck.

With this information in hand the next step was to learn the method of distribution of these products from the time they arrive in the city until they are consumed. A chart was prepared to show the marketing process as applied to Knoxville. (See Figure 2.)

In order to devise methods whereby samples of fruits and vegetables could be examined from time to time with the assurance that duplicate losses were not being recorded and that the produce examined at the various distributing establishments was a random, unaltered sample, it was necessary to have a thorough knowledge of the different places where cars were unloaded, to know the approximate length of time the produce stayed in the hands of the wholesalers, and how, when, and in what quantity it moved to the jobbers and retailers.

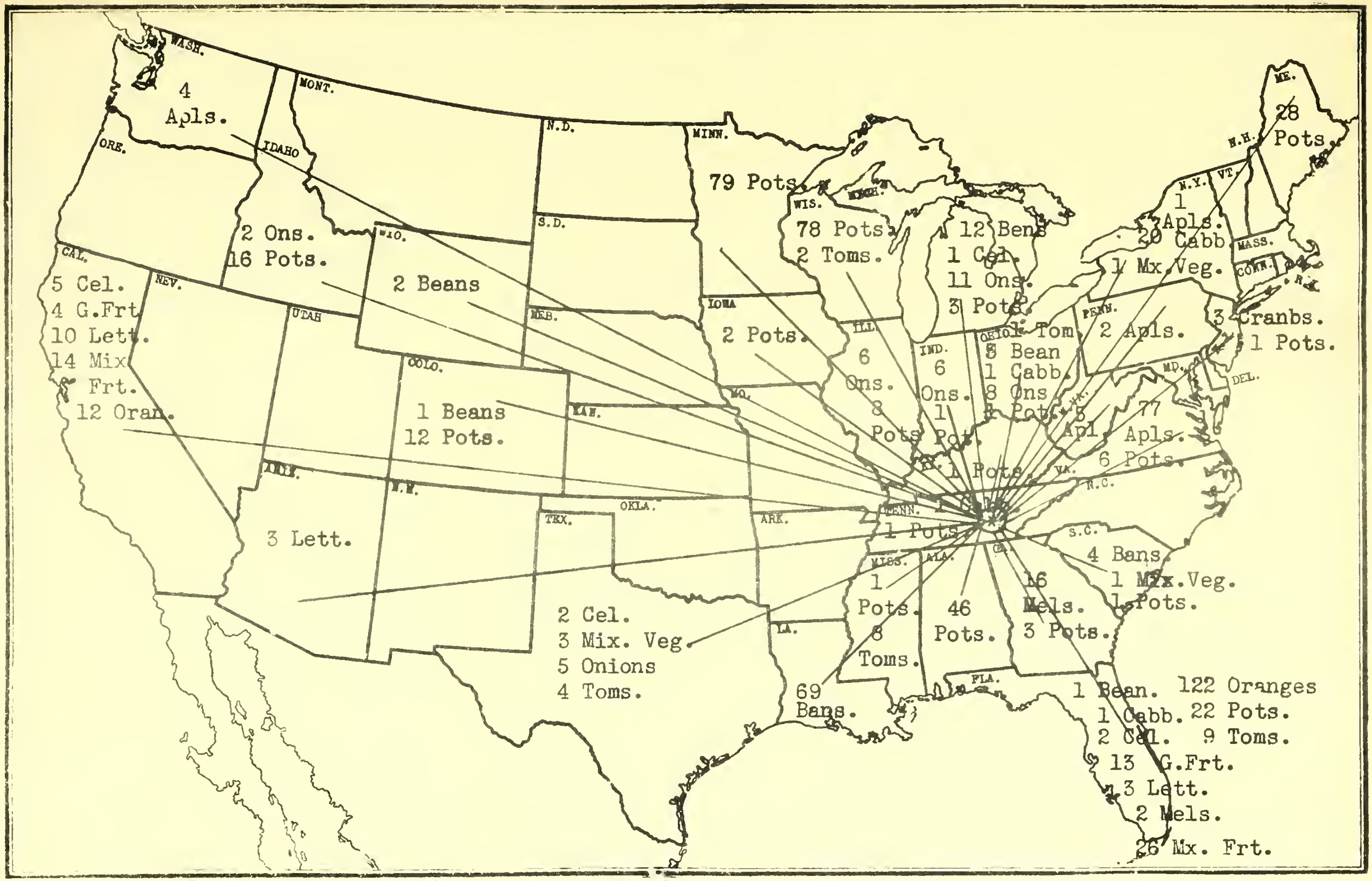

Figure 1. Car-lot shipments of perishables to Knoxville, Tennessee, January 1, 1933 to January 1, 1934. Total 838 (19 unknown).

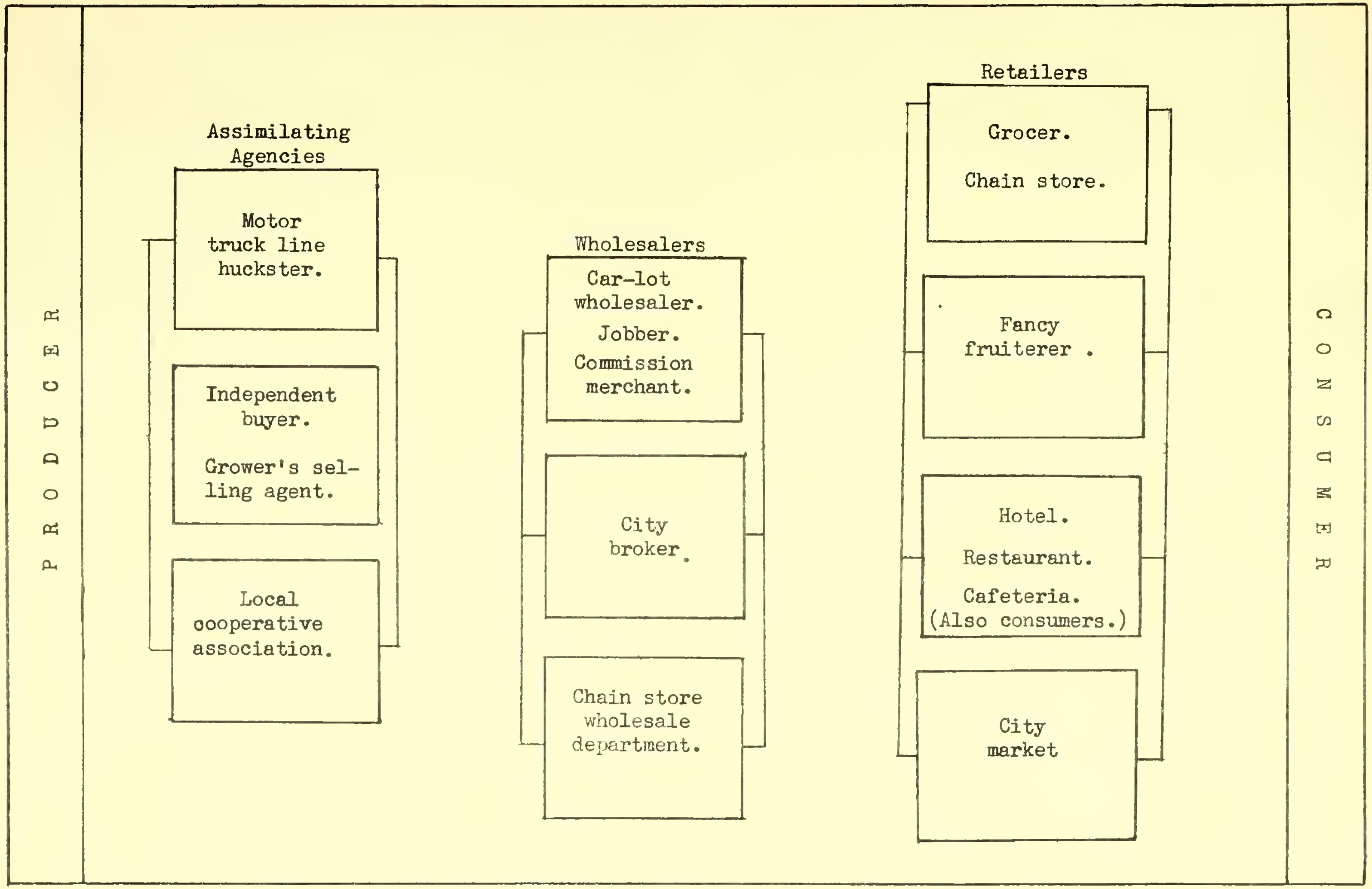

Figure 2. Agencies distributing fresh fruits and vegetables from producers to consumers of Knoxville, Tennessee.

Table 1. Car-lot shipments of perishables to Knoxville, Tennessee by origin--January 1, 1933 to January 1, 1934

	Apples	Bananas	Beans	Cab-bage	Celery	Cran-berry	Grape-fruit	Lettuce
Ala.								
Ariz.								3
Cal.					5		4	10
Col.			1					
Fla.			1	1	2		13	3
Ga.								
Idaho								
Ill.								
Ind.								
Iowa								
Ky.								
La.		69						
Maine								
Mich.			12		1			
Minn.								
Miss.								
N. J.						3		
N. Y.	1			20				
Ohio			3	1				
Penn.	2							
S. C.		4						
Tenn.				1				
Texas					2			
Va.	77							
Wash.	4							
W. Va.	5							
Wisc.								
Wyo.			2					
Unk.1/	2			2	2			
Total	91	73	19	25	12	3	17	16

1/ Unknown--either point of origin was not listed or car had been reconsigned.

(Continued on page 4)

Table 1 (cont'd)

	Melons	2/ Mixed fruit	3/ Mixed Vegetables	Onions	Oranges	Potatoes	Tomatoes	Total
Ala.						46		46
Ariz.								3
Cal.		14			12			45
Col.						12		13
Fla.	2	26			122	22	9	201
Ga.	16					3		19
Idaho				2		16		18
Ill.				6		8		14
Ind.				6		1		7
Iowa						2		2
Ky.						1		1
La.								69
Maine						28		28
Mich.				11		3		27
Minn.						79		79
Miss.						1	8	9
N. J.						1		4
N. Y.			1					22
Ohio				8		1	1	14
Penn.								2
S. C.			1			1		6
Tenn.						1		2
Texas			3	5			4	14
Va.						6		83
Wash.								4
W. Va.								5
Wisc.						78	2	80
Wyo.								2
Unk.					3	6	4	19
Total	18	40	5	38	137	316	28	838

2/ Lemons, grapes, or mixed citrous fruits.

3/ Cars containing two or more vegetables not listed.

Table 2. Car-lot shipment of perishables to Knoxville, Tennessee by months--January 1, 1933 to January 1, 1934

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Apples	10	17	8	10	4	4			5	5	11	17	91
Bananas	1	7	7	10	1	7	7	5	3	6	9	10	73
Beans	2	1	4	1	3	1	1		1	4	1		19
Cabbage	4	6	6	3					1		1	4	25
Celery	3	2								2	3	2	12
Cranberry										1		2	3
Grapefruit	1	2	3		2	8					1		17
Lettuce	1	2	4	2						1	3	3	16
Melons					1	2	15						18
Mixed fruit	7	7	4			2		3	2	4	7	4	40
Mixed vegetables				3	1				1				5
Onions	2	8	5	4	4				1	5	5	4	38
Oranges	5	10	9	16	18	12	3	1		2	8	53	137
Potatoes	30	42	44	41	65	7	1		8	26	23	29	316
Tomatoes	1	4	2	1	4	16							28
Total	67	108	96	91	103	59	27	9	22	56	72	128	838

Table 3. Car-lot shipments of perishables to Knoxville, Tennessee by origin--January 1, 1934 to January 1, 1935.

	Apples	Ban-anas	Beans	Cab-bage	Cel-ery	Cran-berry	Grape-fruit	Grapes	Let-tuce	Lem-ons
Ala.		30		9						
Ariz.									6	
Cal.			5		5			5	30	19
Col.			15							
Fla.		4	3		1		3			
Ga.	1									
Idaho			8							
Ill.										
Ind.										
Iowa										
La.		102		1						
Maine										
Md.	3									
Mo.	1									
Mont.			3							
Mich.			11							
Minn.										
Miss.										
N. J.						2				
N. Y.			4	7						
N. H.	1									
N. D.										
Ohio			3							
Penn.	8									
S. C.		18								
Tenn.				1						
Texas				2						
Va.	85									
Wash.	5									
W. Va.	8									
Wisc.										
Unkn.		3	2						1	
Total	112	157	54	20	6	2	3	5	37	19

(Continued on page 7)

Table 3 (cont'd)

	Melons	Mixed fruit	Mixed Vegetables	Onions	Oranges	Potatoes	Pineapple	Tomatoes	Total
Ala.			1			72			112
Ariz.									6
Cal.		1	1		8		1		75
Col.				2		72			89
Fla.	1	54	1		82	16		7	172
Ga.	5					1			7
Idaho				1		111			120
Ill.						1			1
Ind.				2		3			5
Iowa						1			1
La.									103
Maine						61		2	63
Md.									3
Mo.						2			3
Mont.						1			4
Mich.				8		5			24
Minn.						23			23
Miss.								14	14
N. J.						1			3
N. Y.			1	1		25			38
N. H.									1
N. D.						10			10
Ohio		1		11		1			16
Penn.									8
S. C.						1			19
Tenn.						6		1	8
Texas			17	12				3	34
Va.						7			92
Wash.									5
W. Va.									8
Wisc.						17			17
Unkn.				3	2	4		5	20
Total	6	56	21	40	92	441	1	32	1104

Table 4. Car-lot shipments of perishables to Knoxville, Tennessee by months--January 1, 1934 to January 1, 1935.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Apples	13	15	9	6	4	1			4	14	13	33	112
Bananas	8	9	12	14	22	16	15	15	7	10	10	19	157
Beans				2	1			11	4	16	13	7	54
Cabbage	2	1	1	2	8				1		2	3	20
Celery	2										1	3	6
Cranberry										1	1		2
Grapes									1	2	2		5
Grapefruit		2								1			3
Lemons	1		1	2	2	4	4	2	2		1		19
Lettuce	5	5	5	6	3	1				4	4	4	37
Melons						4	2						6
Mixed fruit	14	16	6	5	2					1	2	10	56
Mixed vegetables	3	3	5	7	1				1		1		21
Onions	5	6	5	3	9	2		1	2	2	2	3	40
Oranges	12	10	23	6	1	2	1	1	1	3	4	28	92
Pineapples							1						1
Potatoes	66	71	77	51	60	38	11	5	11	12	8	31	441
Tomatoes			1	4	5	19	2					1	32
Total	131	138	145	108	118	87	36	35	34	66	64	142	1104

Methods of Obtaining and Recording Losses Sustained by the Distributors

Two methods were used simultaneously in obtaining and recording the losses sustained by the distributors. First, certain representative wholesalers and retailers, including chain stores and stalls in the city market, were selected and the managers were asked to keep accurate records on charts furnished them (see Chart 4 under discussion of methods of contacting consumers) of all fresh fruits and vegetables bought during a given period, say two weeks, and to lay aside the spoiled produce from these purchases. Each day during this period the spoiled goods were inspected, the diseases identified, and the losses recorded. Later other store managers were asked to do the same thing, and by this method of rotation it was thought that fairly accurate and complete records were obtained.

The distributors' interest was aroused and cooperation stimulated by the aid of large colored photographs of diseased fruits and vegetables 1/, and by stressing the importance of their keeping records of their own losses in order to check their inventories of profits and losses more successfully.

The second method of estimating distributors' losses was to visit regularly the establishments where the managers were not keeping records at that time and personally make counts of losses on various products. 2/ This was done best at the time the produce was being received or when the decayed stuff was being sorted out. The losses were recorded on charts which show the date of inspection, cause of loss, quantity inspected, quantity lost, where inspected, and any remarks of significance. An actual sample of such records is given in Figure 3. It is believed that these records not only contained much additional information but also served as a check on those kept cooperatively with the distributors. They gave assurance as well that samples of nearly all produce would be inspected, thus not allowing an unusually good lot or an unusually poor lot to pass unnoticed and unrecorded.

The calculation for arriving at the total loss and percentage loss due to all causes and each cause, is the same as that used for estimating consumers' losses and will be found under the discussion of consumers' records.

1/ Issued by the Bureau of Agricultural Economics and Bureau of Plant Industry.

2/ Two hand counters were used concurrently in arriving at percentage, loss.

Potatoes

Date 1934	Cause of Loss--Fungus, Bacteria, or Physiological: Common Name	Cause of Loss--Fungus, Bacteria, or Physiological: Scientific Name	Quantity Inspected (bu.)	Quantity Lost	Origin	Inspected at	Remarks
1/2	Soft rot	Bacillus Sp.	100	18	Wisc.	Wholesale	
1/8	" "	" "	64	4	"	"	
1/12	Freezing		600	150	Minn.	"	Frozen in transit
1/20	Tuber rot	Fusarium Spp.	150	15	Idaho	"	Culture #7--Idaho Bakers
1/16	Soft rot	Bacillus Spp.	20	2	Wisc.	Retail	
1/24	Brown rot	B. Solanacearum	28	5	Fla.	City Mk.	Culture #54
2/5	Black heart 1/	Oxygen deficiency	600	200	Wisc.	Wholesale	Determined by taking sample bags and cutting open tubers.
2/17	Scab	Actinomyces scabies	150	37	Fla.	"	25% loss by wt. as determined by peeling samples and weighing. Monetary loss.
2/20	"	"	40	10	Fla.	City Mk.	"
2/14	Tuber rot	Fusarium Spp.	300	18	Minn.	Wholesale	
2/16	" "	" "	250	16	"	"	
2/24	Rot	Undetermined	200	18	Wisc.	"	Cultures gave several fungi
3/7	Soft rot	Bacillus Spp.	40	3	Minn.	Retail	
3/12	" "	" "	600	14	Minn.	Wholesale	Car delayed in transit
3/16	Tuber rot	Fusarium Spp.	20	2	Wisc.	City Mk.	
3/17	" "	" "	200	15	Wisc.	Wholesale	
3/22	Soft rot	Bacillus Spp.	150	18	Minn.	Wholesale	Potatoes had been chilled
1/2 to 3/22	No. bushels inspected upon which there was no loss.........		2000				
Total:			5722	298			

Total % loss: 5.2

Analysis of Loss

Freezing	2.6%
Fusarium Spp.	1.2
Bacterial Soft rot	.8
Brown rot and undetermined	.6

1/ These losses were determined at the distributors but were not included in their record as they do not sort out this type of loss.

Figure 3. Copy of chart on which inspection of produce at distributors' establishments is recorded.

Methods of Obtaining and Recording Losses Sustained by the Consumers

Through various mediums interested consumers were contacted with a view to having them keep records of their losses. The press carried several articles which told in general the nature of the survey and its objectives, and specifically how the consumers could be of service in conducting the study. It was suggested that those wishing to volunteer their cooperation should call in. A popularized talk in which the same suggestion was made was broadcast from the local radio station. A few illustrated talks on plant diseases were given before various clubs. Not only did these articles and talks locate several enthusiastic record keepers but they paved the way for the house to house canvass which followed. If an interview with Mrs. Consumer indicated that she was interested in the study and willing to cooperate, she was given a copy of each of the charts and the composite photograph shown in the following pages. (See Figure 4 and Charts 1, 2, 3 and 4).

Chart 1 was devised as an aid to interpreting and analyzing the consumers' loss sheet. Although the number of persons filling out the questionnaire was too small for definite conclusions to be drawn, some general observations were made from it together with the loss record. The social level of the family, as judged by the occupation of the provider, did not reveal any noticeable difference so far as loss per unit purchased was concerned. However, fewer fresh fruits and vegetables were bought by the poorer classes. There seemed to be less loss sustained by those consumers buying every day as compared with those buying at longer intervals. Those purchasing by telephone usually lost more than those personally selecting their produce. About one half of the consumers report spoiled produce when it is discovered immediately after purchase and adjustments are made. Practically all cooperators stress the importance of putting such produce as lettuce, carrots, cabbage, peppers, and lemons in the hydrator as this greatly retards evaporation.

Chart 2 and Photograph: It was believed that this chart and photograph (Figure 4) would help the consumers identify their losses to a certain extent, as well as stimulate interest and furnish much asked-for information. The diseases shown on fruits and vegetables in the photograph represent a great many of those commonly found in the kitchen. The consumers were asked to disregard the scientific name of the causal agent.

Chart 3: In order to bring the description of diseased fruits and vegetables into terms used by the housewife, this chart was prepared. The diseases described here are also some of those commonly found in the kitchen. In these original descriptions no pretense for completeness or orthodoxy is made.

Chart 1

QUESTIONNAIRE TO AID IN INTERPRETING CONSUMERS LOSS CHART

1. Name Mrs. John Doe
2. Address 2608 Calvert St. Telephone No. 3-4527
3. Number in family or group 5
4. Occupation of provider Salesman
5. How often do you purchase:
   - Every day
   - Every other day X
   - Twice a week
   - Once a week
6. Do you order by telephone Not often
7. Do you personally select your fruits and vegetables at the store Yes
8. What part of your fruits and vegetables do you get from:
   - City market 10%
   - Chain store 80%
   - Grocery store
   - Huckster 10%
   - Fruit stand
   - Others
9. Do you report spoiled produce to sellers Yes Do they replace it Ye
10. Do you have: Electric refrigerator X Ice box
11. Do you do your own cooking Yes
12. Do you have any particular method of selecting, buying, storing or using which might have an effect upon your losses Yes If so, explain:

I buy very small quantities, select them myself, and put all lettuce, cabbage, peppers, lemons, and other produce which deteriorates from wilting, in the hydrator, which keeps them fresh much longer than the refrigerator alone. Bananas are never put in the refrigerator. I lose more tomatoes, oranges, and potatoes than other produce.

Chart 2

EXPLANATION TO ACCOMPANY PHOTOGRAPH OF DISEASED FRUITS AND VEGETABLES

Product		Common Name	Causal Agent
1.	Onion	Smudge	Colletotrichum circinians
2.	Onion	Black mold	Aspergillus niger
3.	Onion	Soft rot	Bacillus carotovorus
4.	Banana	Fruit rot	Gloeosporium musarum
5.	Lemon	Brown rot	Phytophthora citrophthora
6.	Tomato	Buckeye rot	Phytophthora terrestris
7.	Tomato	Ripe rot	Phoma destructiva
8.	Pepper	Rot	Rhizopus nigricans
9.	Potato	Black-heart	Overheating (Usually)
10.	Potato	Scab	Actinomyces scabies
11.	Potato	Stem-end-rot	Fusarium eumartii
12.	Sweet potato	Black rot	Sphaeronema fimbriatum
13.	Sweet potato	Soft rot	Rhizopus nigricans
14.	Bean	Soft rot	Rhizopus nigricans
15.	Bean	Soil rot	Rhizoctonia sp.
16.	Apple	Blue mold	Penicillium expansum
17.	Apple	Black rot	Physalospora malorum
18.	Apple	Blotch	Phyllosticta solitaria
19.	Apple	Bitter pit	Physiological
20.	Apple	Rust	G. juniperi-virginianae
21.	Apple	Scab	Venturia inaequalis
22.	Apple	Scald	Physiological
23.	Celery	Foot rot	Sclerotinia sclerotiorum
24.	Celery	Soft rot	Bacillus carotovorus
25.	Pineapple	Soft rot	Thielaviopsis paradoxa
26.	Peach	Brown rot	Sclerotinia fructicola
27.	Orange	Blue mold	Penicillium sp.
28.	Eggplant	Fruit rot	Phomopsis vexans

29 This shows a typical fungus (plant) which causes plant diseases. Note the spores (seed) which germinate and enter the fruits and vegetables causing them to decay.

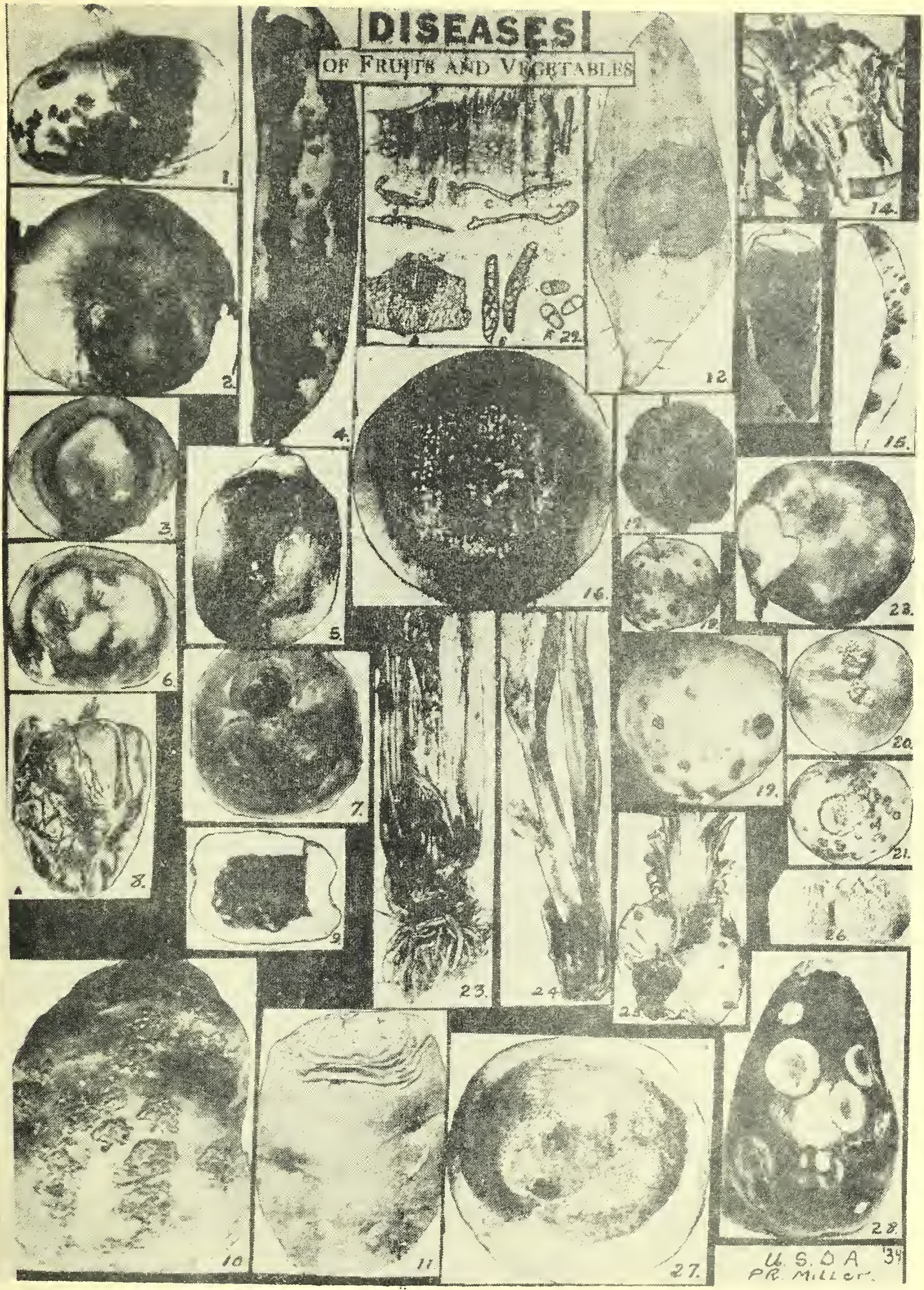

Figure 4. Composite photograph distributed to cooperators.

Chart 3

DESCRIPTION OF DISEASES COMMONLY FOUND BY CONSUMERS

Oranges, Tangerines, Grapefruit and Lemons

Blue mold: The fruit is watery and soft at first, then there appears a filmy white growth which later becomes blue-green.

Stem-end rot: Soft, colorless rotting at the stem end at first, and finally destroying the whole fruit, working from the inside.

Brown rot: Occurring on lemons first shows a greasy, scalded spot which becomes brown and finally covered with a cobwebby growth.

Apples

Blue Mold: Causes a very soft, tan colored, watery rot which becomes dotted with white or greenish-blue growths.

Black rot: Not sunken at first. Moderately brown rot which becomes zoned with black, and finally bears small dots or pimples.

Moldy core: Flesh of fruit near core shows brownish and soft areas frequently bearing webby-like growth.

Celery, Carrots, Tomatoes, Beans, and Peas

Soft rot: Odorless, watery soft rot, characterized by a white cottony growth and shrinkage.

Potatoes

Black heart: Moist or purple areas on the surface, and star-shaped area in center which may have cavity.

Soft rot: Soft, mushy rot with exceedingly foul odor.

Dry rot: Sunken, withered area, often bluish. Surface becomes dry and powdery, cheesy within.

Sweet Potatoes

Dry rot or **soft rot:** Commonly found at ends. Tissue is soft, watery and stringy, yielding a perfume odor. The affected tissue may become dry, shrunken and yellowish brown.

Black rot: Black, circular depressed spots, usually about one inch in diameter.

Onions

Soft rot: Soft and mushy, usually starting inside, with foul odor.
Black mold: Black, powdery masses on or between scales.

Eggplant

Soft rot: Numerous brown, circular, sunken spots

Chart 4.

CONSUMERS DISEASE LOSS CHART

1934 Product	Date and amount	Loss and nature of loss	Date and amount	Loss and nature of loss	Date and amount	Loss and nature of loss	Date and amount	Loss and nature of loss
Apples	4/3 ½ gal.	3 Scald	4/10 ½ gal.	2 Scald	4/17 1 gal.	2 S.Rot	4/21 ½ gal.	1 S.Rot 2 Scald
Bananas	4/3 1 doz.	1 #4	4/8 ½ doz.	None	4/17 4 frts.	None	4/21 ½ doz.	1 S.Rot
Beans	4/5 3 lbs.	None			4/16 3 lbs.	½ lb. # 15		
Carrots	4/3 1 Bnch.	None	4/10 1 Bnch	None			4/19 1 Bnch.	None
Celery	4/10 2 Bnch.	1/4 By wt.	4/21 1 Bnch.	None				
Eggplant	4/30 2 Frts.	None	4/14 1 Frt.	1 # 28				
Gr. Fruit	4/4 5 frts.	1 Stem rot	4/17 6 frts.	1 Blue Mold			4/23 4 frts.	None
Lemons	4/10 ½ doz.	None	4/21 ½ doz.	1 Brown rot				
Onions	4/6 4 lbs.	3 # 2			4/15 2 lbs.	None		
Oranges	4/8 1 gal.	2 Stem rot	4/17 1 gal.	1 # 27	4/23 ½ gal.	None		
Peas								
Potatoes(w)	4/4 1 gal.	2 Black heart	4/9 ½ gal.	None	4/17 1 gal.	25% By wt. # 10		
Potatoes(s)	4/9 1 gal.	2 S.Rot # 13					4/21 1 gal.	1 lb. # 12
Tomatoes	4/3 5 frts.	None			4/17 6 frts.	1 Soft Spot		
Others								
Lettuce	4/3 3 heads	½ head						
Peppers	4/10 6 frts.	1 # 8					4/21 3 frts.	1 S.Rot

Chart 4. This chart was used by the consumers for recording their purchases and losses. Such a chart was deemed necessary as an aid to uniformity. The housewife kept the chart in her kitchen and when she found a rotten apple, for example, she merely jotted a record of it on the chart. As a rule all purchases and losses during a month could be recorded on one sheet. Samples of the decayed produce found by the consumers were laid aside for inspection and more detailed identification. If diseases could not be diagnosed on the basis of symptoms the usual culture method was used. When cause of loss could not be determined it was listed as undetermined.

It will be noted from the sample chart that sometimes produce bought is recorded in one unit of measurement and the amount lost in another unit. In order to convert the quantities into like terms, a standardized conversion table was prepared which listed the number of apples, oranges, potatoes, etc., per unit measurement. The total amount of each product purchased was divided by the total amount of that product lost, which gave the percentage loss from all diseases. Similarly the total amount lost from each of the various diseases was calculated and the same method used to determine percentage loss from each disease. Due to the fact that identical charts were used for recording both distributors' and consumers' losses, the procedure for arriving at the analysis of the loss of each was the same.

Estimates of Loss

The distributors' loss as recorded in Table 5 was arrived at by combining the results of the 40 records kept cooperatively with the wholesalers and retailers for periods of two weeks or more each and the results of the 50 to 100 personal inspections of each of the various fruits and vegetables. The consumers' loss, recorded in the same table, was arrived at by combining the results of the records kept for one month or more by 200 consumers and the results of the records kept by the cafeterias cooperating. All records were kept under supervision, and final determinations of causes for loss were checked personally.

Losses are recorded in the following table (Table 5) for twentyfour fruits and vegetables alphabetically by common name.[1]

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[1] Some records were made of losses of pears, grapes, squash, pineapples, peaches, and cherries but at present they are insufficient to justify even a tentative estimate of the percentage loss.

TABLE 5.
ESTIMATED FRESH FRUIT AND VEGETABLE LOSS SUSTAINED BY DISTRIBUTORS AND CONSUMERS

Product	Amounts & No. Samples Estimates Based upon	Total % Loss	Percentage Loss from Various Causes					
Apples 1/ (Malus sylvestris)	4000 bu. (160)	% 5.	Scald (Non par.)3/	3.5	Penicillium expansum Alternaria Sp. Physalospora obtusa Undetermined decays	1.5	Scab (Venturia 4/ inaequalis) Sooty blotch (Gloeodes pomigena) Rust (Gymnosporangium)	
" 2/	80 bu. (175)	4.	Scald and internal breakdown	3.	"	1.	"	
Avocadoes (Persea americana)	125 crates (42)	1.	Decayed areas near seed--cause undetermined	1.	Scab (Sphaceloma perseae) See 4/	?		
"	7 crates (60)	.2	"	.2				
Bananas (Musa Sp.)	1800 stalks (78)		Overripening and Fruit rot (Gloeosporium musarum)	4.	Bruises and hard green areas	1.		
"	100 doz. (40)		Overripening and bruises	3.				

1/ Upper row for each product represents distributors' losses.
2/ Lower row for each product represents consumers' losses.
3/ Scald was not observed on Western apples.
4/ Fruits and vegetables bearing these diseases may cause thedistributors a monetary loss but they are passed on to the consumers who bear the actual loss.

(Continued,page 17)

TABLE 5 (Cont'd)

Product		Total % Loss	Percentage Loss from Various Causes					
Beans (Phaseolus vulgaris)	800 hampers (65)	6.	Slimy soft rot (B. carotovorus) Pythium Sp.)	2.	Watery soft rot (Sclerotinia Sp.)	2.	Freezing injury	2.
"	23 hampers (120)	3.	Soil rot (Rhizoctonia Sp.)	1.	Anthracnose (Colletotrichum lindemuthianum) Blight (Bacterium Sp.)	1.	Undetermined decays	1.
Cabbage (Brassica oleracea)	4000 bu. (90)	15.	Freezing injury Shrinkage Trimming off outside leaves	8.	Bacterial rot (Bacillus Carotovorus) Leaf spot (Alternaria brassicae)	5	Black rot (Bacterium campestre) Grey mold (Botrytis Sp.)	2.
"	55 bu. (70)	3.	Trimming off leaves	3.				
Cantaloupes (Cucumis melo)	3000 frts. (17)	6.	Anthracnose (Colletotrichum lagenarium)	4.	Scab (Cladosporium Sp.) Alternaria Sp.	2.		
"	200 frts. (32)	.5	Rotten and undetermined decays	.5				
Carrots (Daucus carota)	260 crates (75)	1.	Watery soft rot (Sclerotinia sclerotiorum)	.8	Grey mold (Botrytis Sp.) Rhizopus Sp.)	.2		
"	7 crates (104)	.02	Undetermined	.02				

(Continued, page 18)

TABLE 5 (Cont'd)

Product		Total %Loss	Percentage Loss from Various Causes					
Cauliflower (Brassica oleracea botrytis)	396 crates (70)	10.	Grey mold (Botrytis Sp.)	3.	Watery soft rot (Sclerotinia Sp.) Black spot (Alternaria Sp.)	2.	Undetermined decays and wilting	5.
"	20 crates (115)	1.	Trimming off discolored portions					
Celery (Apium graveolens)	496 crates (95)	5.	Watery soft rot (Sclerotinia sclerotiorum)	3.	Slimy soft rot (Bacillus carotovorus)	1.	Black heart and hollow stem	1.
"	845 bunches (127)	7.	Trimming off wilted & discolored portions	4.	Black heart and undetermined causes	3.		
Cranberries (Vaccinium macrocarpon)	297 crates (21)	11?.	Cultures were not made 1/					
"	5 crates (37)	12.	"					

1/ Loss was estimated by counting the berries of one quart taken from selected crates of each shipment. All loss in this case was borne by consumers, since distributors do not sort out decayed berries.

(Continued, page 19)

TABLE 5 (Cont'd)

Product		Total % Loss	Percentage Loss from Various Causes					
Eggplant (Solanum melongena)	300 crates (90)	4.5	Fruit rot (Phomopsis vexans)	4.5	Phoma Sp. and Diplodia Sp. 1/			
"	6 crates(65)	.5	"	.5				
Grapefruit (Citrus grandis)	7500 bu. (95)	9.	Stem-end rot (Phomopsis citri & Diplodia natalensis)	5.	Blue mold (Penicillium Sp.) Bruises & undet.	4.	Buckskin--undet. 2/ Melanose (Phomopsis citri) Tear stain	
"	92 bu. (125)	6.	"	2.5	"	3.	Undet. decays	.5
Lemons (Citrus limonia)	683 crates (215)	5.	Blue mold (Penicillium Sp.),	3.	Brown rot (Phytophthora citrophthora) Alternaria Sp.	1.	Undetermined decays	1.
"	9 crates (170)	4.5	Blue mold (Penicillium Sp.)	2.	"	1.	Hard and dry (Undet.)	1.5
Lettuce (Lactuca sativa)	306 crates (160)	8.	Tipburn (non par) Russett (undet.)	2.	Physiological trouble: (Loss of moisture & splitting)	5.	Slimy soft rot (Bacillus carotovorus)	1.
"	25 crates (240)	10.	"	4.	"	6.		

1/ These fungi were occasionally isolated but apparently caused little trouble.
2/ These diseases may cause the distributor a monetary loss.

(Continued, page 20)

TABLE 5 (Cont'd)

Product		Total % Loss	Percentage loss from Various Causes					
Onions (Allium cepa)	518 bu. (115)	12.	Soft rot (Bacillus carotovorus)	3.	Smudge (Colletotrichum circinans)	1.	Freezing injury Sprouting Undet. decays	8.
"	75 bu. (95)	10.	"	2.	Black mold (Aspergillus niger) Smut (Urocystis cepulae) Smudge(C. circinans)	2.	"	6.
Oranges 1/ (Citrus sinensis)	5690 bu. (105)	8.	Blue mold (Penicillium Sp.	4.	Stem-end rot (Diplodia natalensis & Phomopsis citri)	2.	Freezing injury & undetermined decays	2.
"	75 bu. (206)	10.	"	5.	" Black rot (Alternaria citri)	3.	"	2.
Peas (Pisum sativum)	838 bu. (65)	3.5	Freezing injury	2.	Watery soft rot (Sclerotinia Sp.) Bacterium Sp.	1.5		
"	6 bu. (20)	1.	"	.8	" Pod spot ?	.2		
Peppers (Capsicum frutescens)	170 hampers (85)	20.	Rhizopus nigricans Anthracnose (Gloeosporium Sp.)	15.	Bacterial spot (Bacterium Sp.)	2.	Sun scald Freezing injury	3.
"	3 hampers (60)	7.	"	5.	"	1.	Scald and undet.	1.

1/ The loss noted this past season was considerably lower than for the year before but the quality of the fruit was decidedly inferior to that of last year.

(Continued, page 21)

TABLE 5 (Cont'd)

Product		Total % Loss	Percentage Loss from Various Causes					
Potatoes 1/ (Solanum tuberosum)	7000 bu. (85)	6.5	Freezing injury	2.5	Tuber rots (Fusarium spp.) Undet. decays	2.	Soft rot (Bacillus Spp.) Leak (Pythium Debaryanum)	2.
"	175 bu. (275)	8.	Black heart (Non par) Hollow " " " Net necrosis (Undet.) Freezing injury	5.	Tuber rots (Fusarium spp.) (Bacillus ") Undet. decays	1.5	Scab (Actinomyces scabies) 2/	1.5
Potatoes (Sweet) (Impomoea batatas)	400 bu. (60)	5.	Soft rot (Rhizopus nigricans)	4.	Stem rot (Fusarium sp.)	1.	Black rot (Ceratostomella fimbriata) 3/	
"	25 bu. (90)	12.	Soft rot (Rhizopus nigricans) Stem rot (Fusarium sp.)	10.	Black rot (Ceratostomella fimbriata)	2.		
Raspberries (Rubus sp.)	90 gal. (12)	12.	Grey mold (Botrytis sp.) Black mold (Rhizopus sp)	10.	Bruises & Undet. decays	2.		
	15 gal. (15)	8.	" " Undet. decays	8.				

1/ Percentage loss of potatoes was considerably greater this past season than the year before. Approximately three-fourths of cooperators mentioned that potatoes would not cook uniformly.

2/ Percentage loss was determined by weighing that portion of the potato which had to be peeled off in order to remove deep scab lesions. This occurred principally on new potatoes (Red Bliss variety).

3/ Sweet potatoes infected with black rot may cause the dealer a monetary loss but the consumer bears the actual loss.

(Continued, page 22)

TABLE 5 (Cont'd.)

Product		Total % Loss	Percentage Loss from Various Causes					
Strawberries (Fragaria sp.)	150 crates (20)	10.	Leak (Rhizopus sp.)	8.	Bruises, green & undet. decays	2.		
"	20 crates (70)	15.	"	10.	" Grey mold rot (Botrytis sp.)	5.		
Tangerines (Citrus nobilis)	3000 bu. (60)	15.	Blue mold & green mold (Penicillium Sp.)	10.	Stem-end rot (Diplodia natalensis & Phomopsis citri)	1.	Bruising & crushing during shipment	4.
"	35 bu. (80)	5.	"	4.	" Black rot (Alternaria Sp.)	1.		
Tomatoes (Lycopersicum esculentum)	220 lugs (100)	20.	Ripe rot (Phoma destructiva)	8.	Buckeye rot (Phytophthora terrestris) Undet. decays	2.	Freezing injury Blossom-end rot Cat face; bruises	10.
"	25 lugs (150)	7.	"	5.	Bruises and undetermined causes	2.		
Watermelons (Citrullus vulgaris) 1/	5640 frts. (8)	17.	Anthracnose (Colletotrichum lagenarium)	10.	Diplodia rot (" sp.)	5.	Bruising & crushing in transit	2.

1/ No record was made of consumers' watermelon loss.

Discussion

Although the losses in preceding Table 5 are calculated and recorded in percentage to the nearest tenth place, it must be understood that they are only estimates and that the accuracy of the total amount of loss recorded for each fruit and vegetable for both distributor and consumer depends upon how nearly the samples counted were representative of the total volume purchased during the period of time that the records were made. The reliability of the amount of loss from each cause obviously depends upon the ability of the examiner to diagnose the diseases. [1] In cases where specimens bore more than one disease record was made of the one apparently causing the most loss or of the one causing the most prominent symptoms.

After seeing the diseased specimens frequently in large quantities, it was found that the more common diseases could be identified at sight with relative ease. A great deal of satisfaction was derived from observing how well the cooperators could classify their major losses by the aid of the pictures and descriptions of diseases furnished them.

A few difficulties encountered which have a bearing on this problem and which should probably be considered are: 1. The annual variation in the amount of loss on certain produce: For instance, the percentage loss of potatoes for the latter part of 1934 and early 1935 was very noticeably greater than during the previous year. Oranges showed considerably lower percentage loss from decays during the same period but the quality of the fruit was much poorer than during the preceding year. 2. The difficulty in determining monetary loss and partial-actual loss: Diseases such as apple scab, blotch, and rust, potato scab, and various other surface diseases, many times cause the retailer a monetary loss, but the produce usually passes on to the consumer who bears the actual loss. These losses are very difficult to measure. Some diseases, such as black heart and hollow heart of potatoes, and internal breakdown of apples cannot be detected until the produce is being prepared for consumption. 3. The possible error in percentage loss when records are made on the same produce while it is in the hands of the different classes of distributors: For example, if 100 bushels of oranges were inspected at the wholesalers and 5 bushels were decayed, and the remaining 95 bushels were inspected at the retail store and 10 bushels were decayed, the total loss from the 100 bushels would be 15 bushels or 15 per cent. However, the recorded loss would be 5 per cent (5 bushels loss from 100 bushels) in case these oranges were inspected only at the wholesalers; or 9.5 per cent (10 bushels loss from 95 bushels) if inspected only at the retailers. If inspected at both wholesalers and retailers without a knowledge of its being the same shipment, the recorded loss would be 7.6 per cent (15 bushels loss from 195 bushels). Obviously, the recorded loss in any of these cases would be less than the actual loss. It is doubtful, though, if many duplicate losses are recorded, as a thorough check was made of most of the shipments upon which loss was recorded. As a rule, moreover, diseases found with the wholesaler are not found with the retailer. Some of the diseases predominant with the wholesaler are soft rot of celery, onions, potatoes, and sweet potatoes, freezing injury of peas, beans, potatoes, etc.; with the retailer, ripe rot of bananas, watery soft rot and grey mold of cauliflower, fruit rot of egg plant, rhizopus rot of peppers, and phoma rot of tomatoes. On the other hand, such diseases as decays of cranberries, scab of potatoes, scald of apples, soil rot, bacterial blight, and anthracnose of beans, hollow heart and black heart of potatoes, and black rot of sweet potatoes are predominant with the consumer, while diseases such as stem-end rot and blue mold of citrus fruits and rhizopus of strawberries may be found with wholesaler, retailer, and consumer.

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[1] The term "disease" as used in this report means any departure from the normal in such a way that it renders the produce inedible or otherwise undesirable from the standpoint of consumption.

This survey, which afforded numerous contacts with fruit and vegetable dealers, emphasized the fact that very few of them are aware that an apple, potato, orange, or any other fruit or vegetable is a living plant part and consequently subject to injury and disease, leading eventually to loss of the product. They do not realize that when the natural protective covering of a product is broken or bruised excessive loss of water occurs and entrance for disease producing organisms is permitted. Nor do they understand the fundamental purpose of refrigeration of fruits and vegetables--that it retards the ripening process and inactivates the disease producing organisms. This lack of knowledge and its application, in addition to handling ungraded, poor quality produce was indirectly responsible for a considerable portion of the loss recorded in the preceding table.

Two specific examples of the above may be cited. A shipment of oranges which arrived in fair condition was unloaded by the shovel method as illustrated in Figure 5. Due to over-stocking they were held for ten days at common storage conditions. The injuries received while unloading plus the ever present blue mold spores in the atmosphere resulted in a 500 bushel loss as shown in Figures 6 and 7.

Figure 8 shows graphically the temperature and relative humidity for periods of a week each in four different places where fruits and vegetables were stored temporarily. The line with the arrows represents the temperature, the other line the relative humidity. Record A shows that the temperature ranged from about 80 to 85 degrees, while the humidity fluctuated considerably from day to day. The fluctuation in humidity was probably caused by a

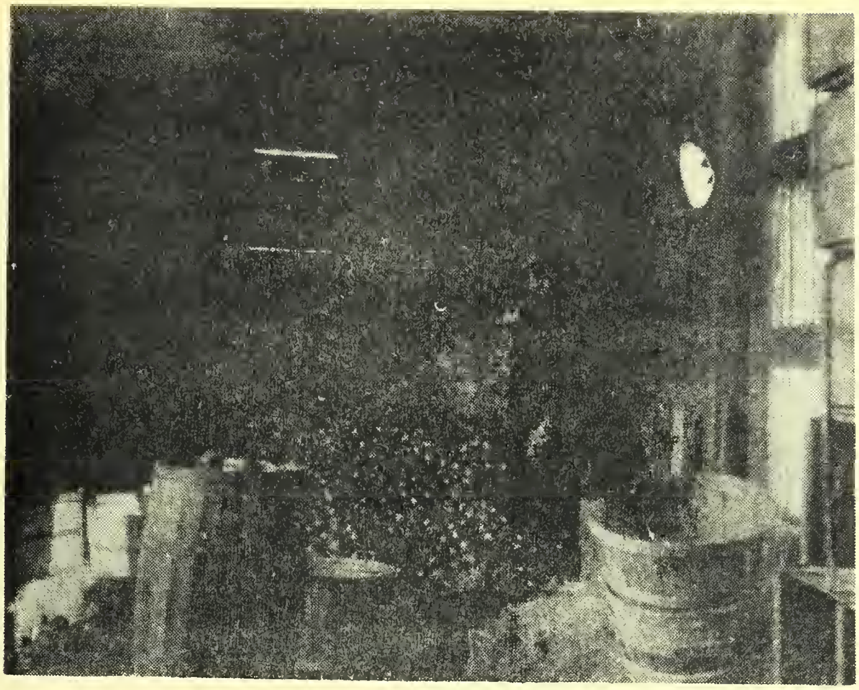

Figure 5. Unloading oranges from box car by "Scoop-shovel" method.

Figure 6. Same oranges after ten days in storage: 500 bushels loss from car of 600 bushels.

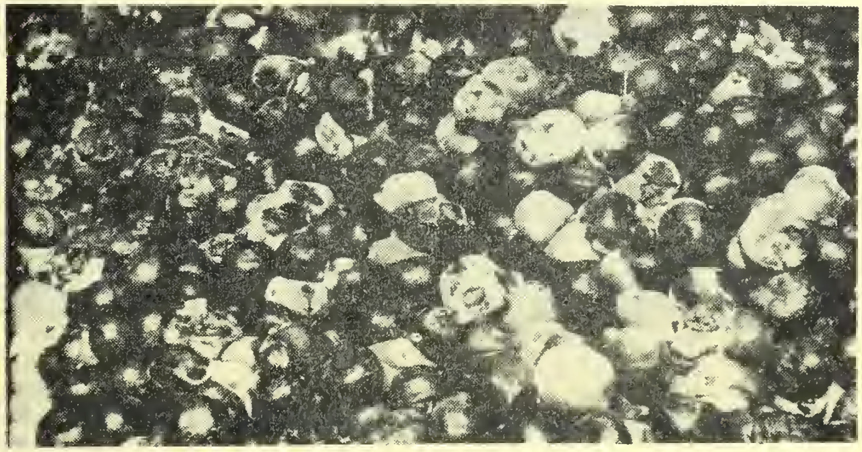

Figure 7. Close-up view of Figure 6, showing blue mold (Penicillium spp.)

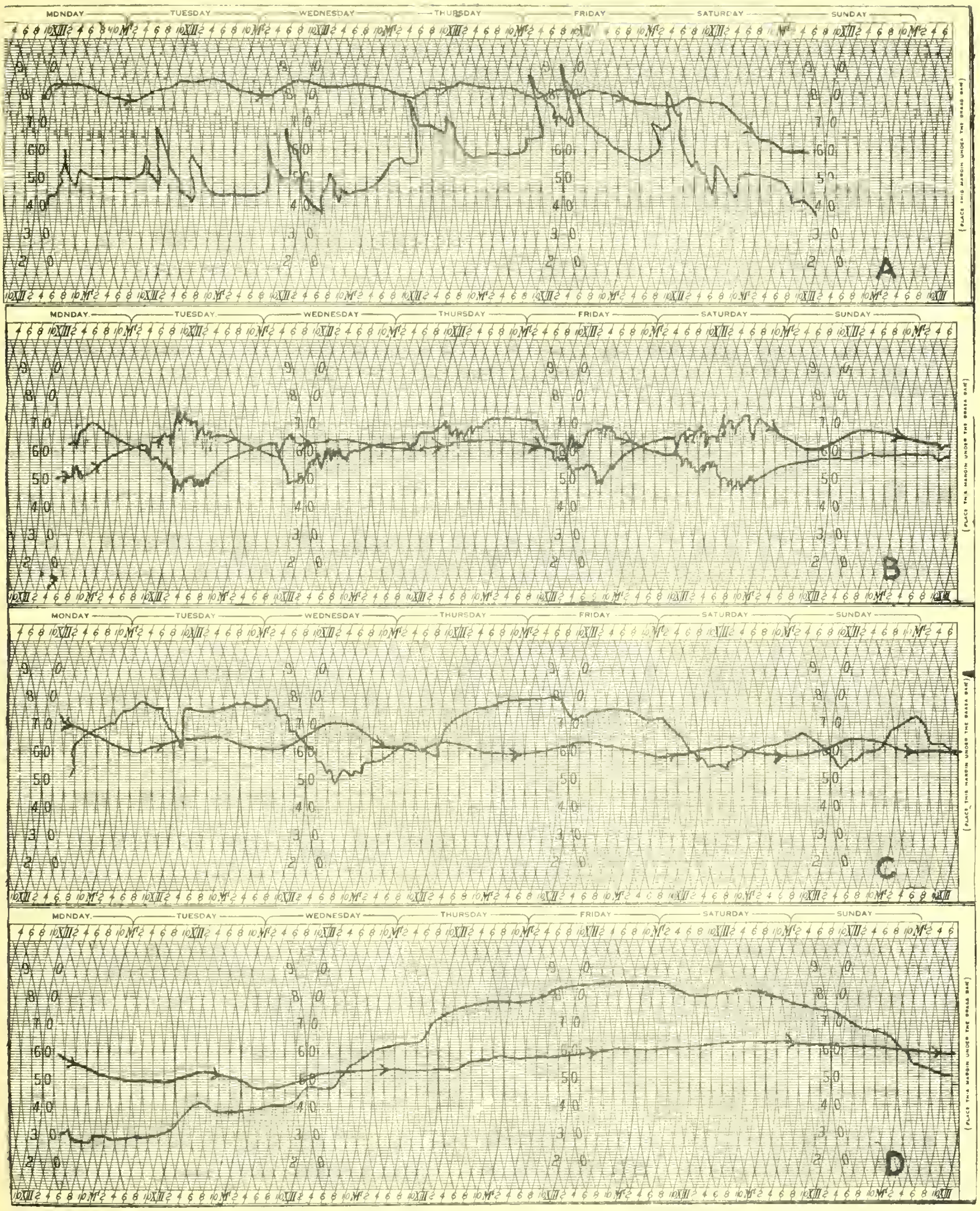

Figure 8. Hygrothermograph records of four fruit and vegetable storage rooms.

steam boiler popping off in an adjoining room. Record B shows a considerable rise in temperature each morning which was probably due to a fire being built in the storage room stove. It will be noted that this rise did not occur on Sunday. The temperatures for Records C and D are fairly uniform and low enough to make these places suitable for storage purposes. The humidity closely approximated that on the outside.

In conclusion, this survey resolved itself into three essential factors: 1. Obtaining a thorough knowledge of the details of distribution of fruits and vegetables from the time they arrive in the city until they are consumed. 2. Securing a large group of interested, sincere, and enthusiastic cooperators who were willing to keep accurate and complete records of all their purchases of fruits and vegetables for a definite period of time and to call attention to all spoiled produce. 3. Devising a systematic and uniform method of taking notes so that every record made contributed toward the final estimate of loss.

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THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

Supplement 89

Crop Losses from Plant Diseases in the United States

1934

December 15, 1935

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

ESTIMATES OF CROP LOSSES FROM DISEASES IN THE UNITED STATES - 1934

Compiled by

Jessie I. Wood

Plant Disease Reporter
Supplement 89

December 15, 1935

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FOREWORD

These estimates of crop losses for the year 1934 have been computed and are presented in the same way as in previous years (Plant Dis. Reptr. Suppl. 83. 1932).

In addition to the tables showing reduction in yield for 1934, a graphic summary of losses during the ten years from 1925 to 1934 is furnished. This summary does not include all the crops or diseases for which loss estimates are given. The choice was made on the basis of a sufficient number of States reporting for a sufficient number of years to make a comparison possible. Some diseases showed so little variation from year to year that no graphs were prepared, although adequate estimates were available.

Besides the yearly fluctuation in loss, the graphs show the averages for the two overlapping ten-year periods 1920 to 1929 and 1925 to 1934. The earlier average is the higher in most cases, although sometimes so little higher that there is practically no difference. Exceptions are oat smuts, corn smut and ear rot, potato tipburn and leaf roll, and sweet potato stem rot, where the first ten-year period shows less loss, and wheat leaf rust, stem rust and crown rust of oats, and peach leaf curl, where the average is the same for both periods.

WHEAT

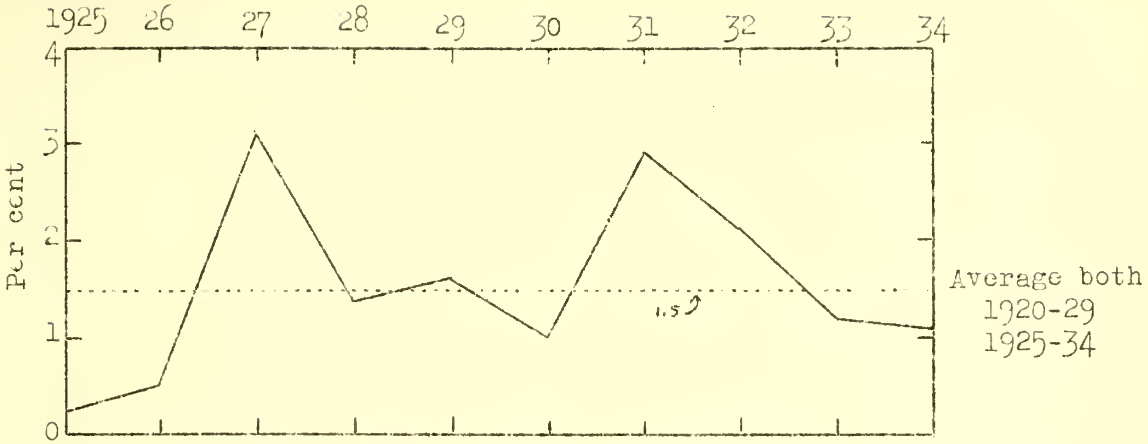

Fig. 1. WHEAT: Losses from leaf rust, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

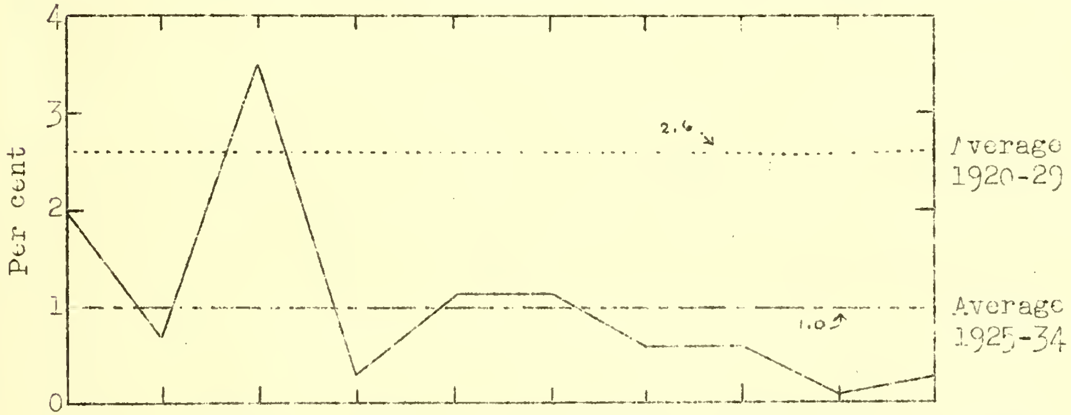

Fig. 2. WHEAT: Losses from stem rust, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

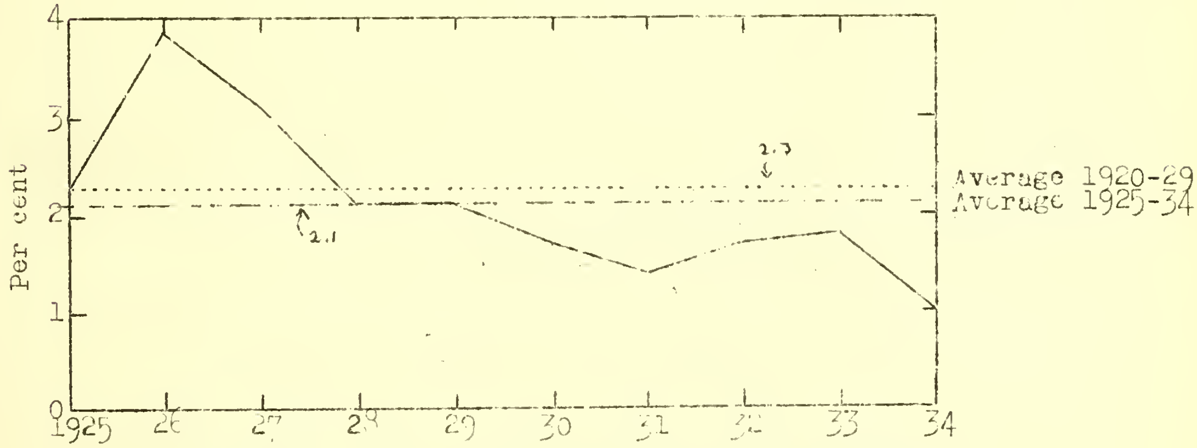

Fig. 3. WHEAT: Losses from bunt, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

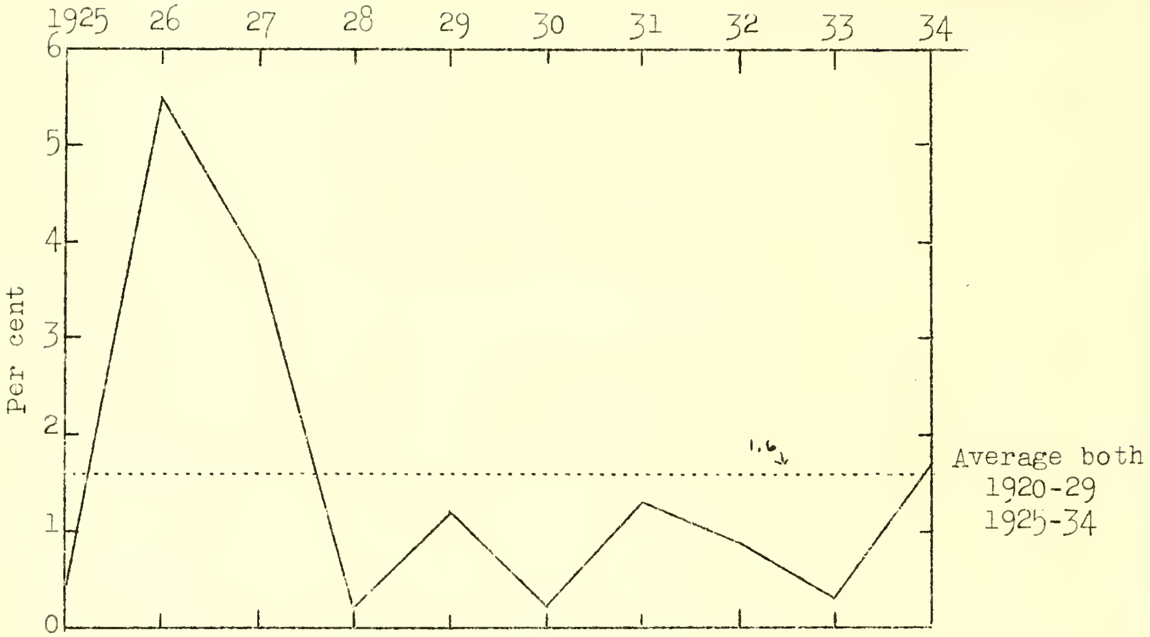

Fig. 4. OATS: Losses from stem rust, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

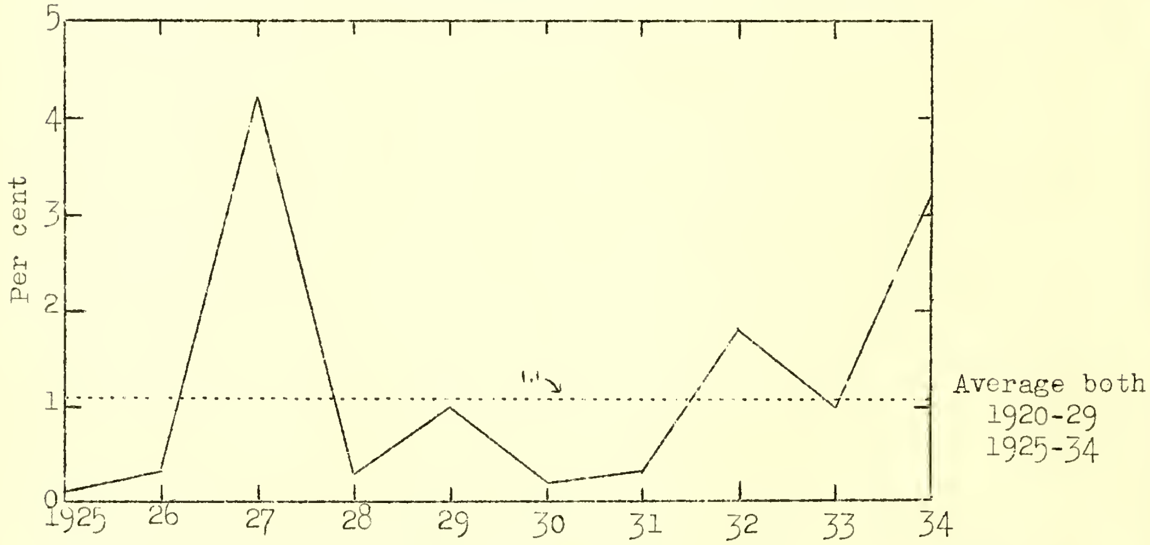

Fig. 5. OATS: Losses from crown rust, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

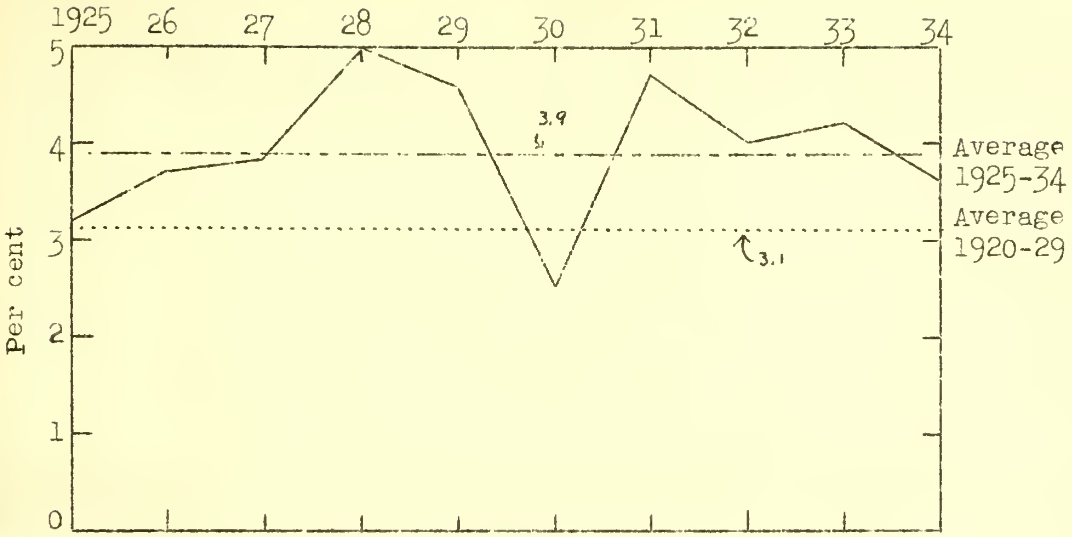

Fig. 6. OATS: Losses from smut, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

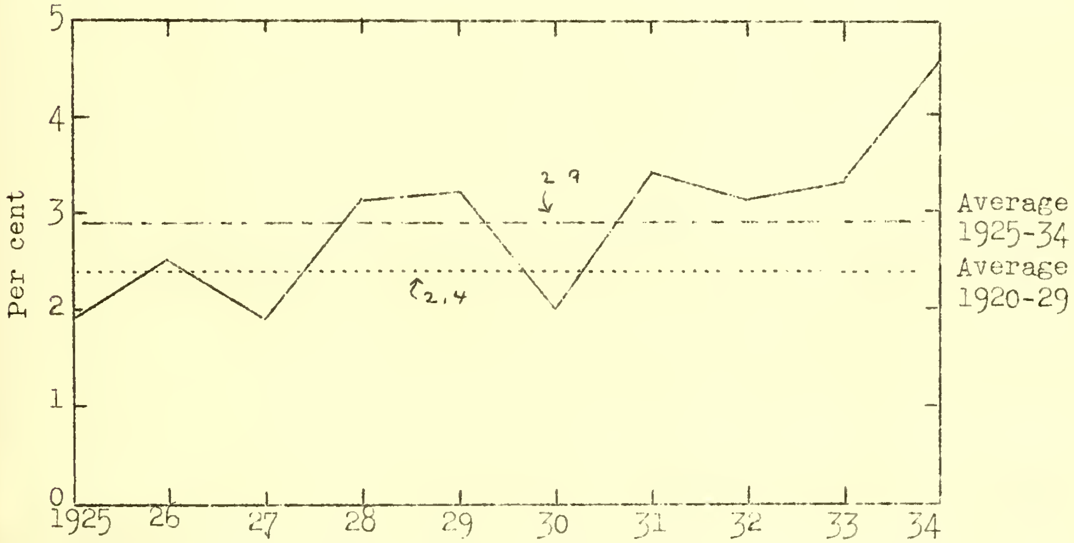

Fig. 7. CORN: Losses from smut, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

CORN

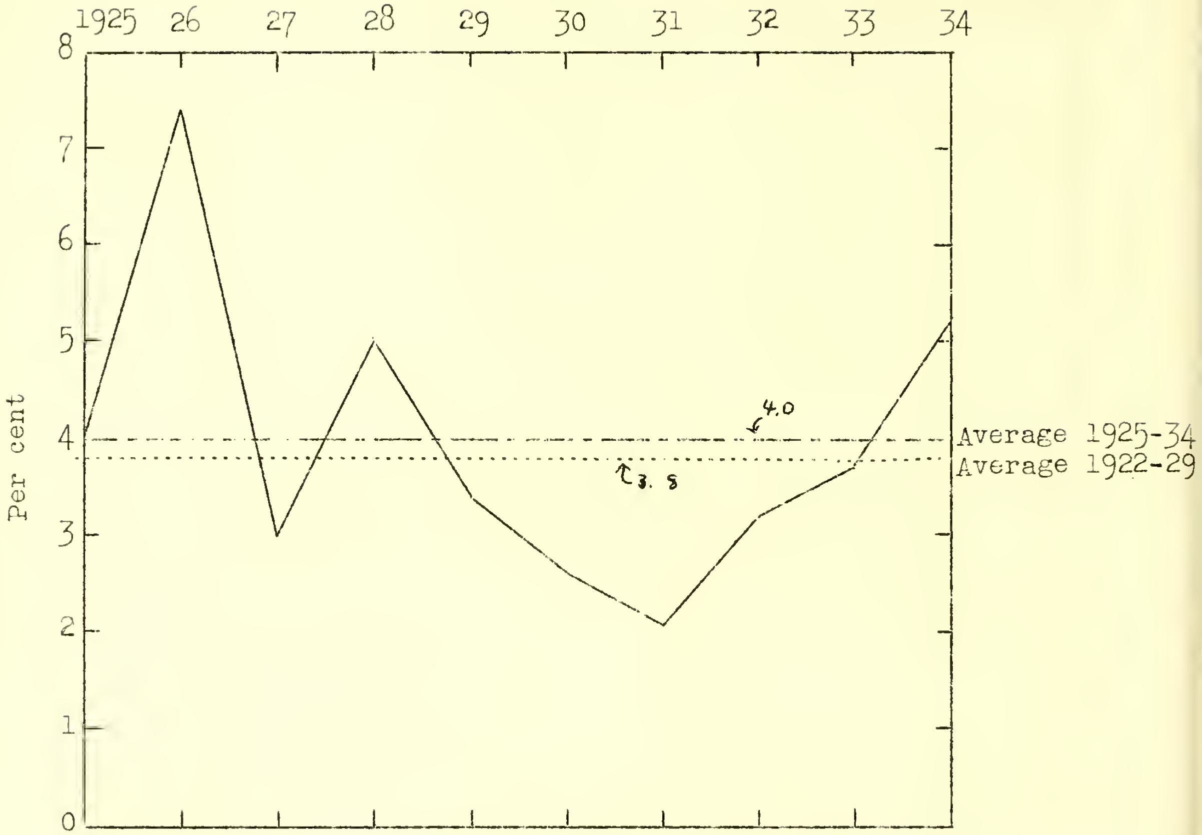

Fig. 8. CORN: Losses from ear rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

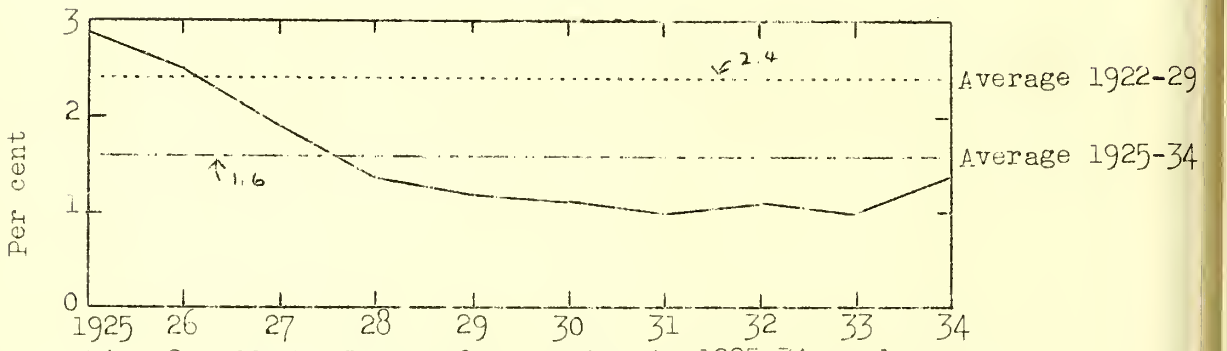

Fig. 9. CORN: Losses from root rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

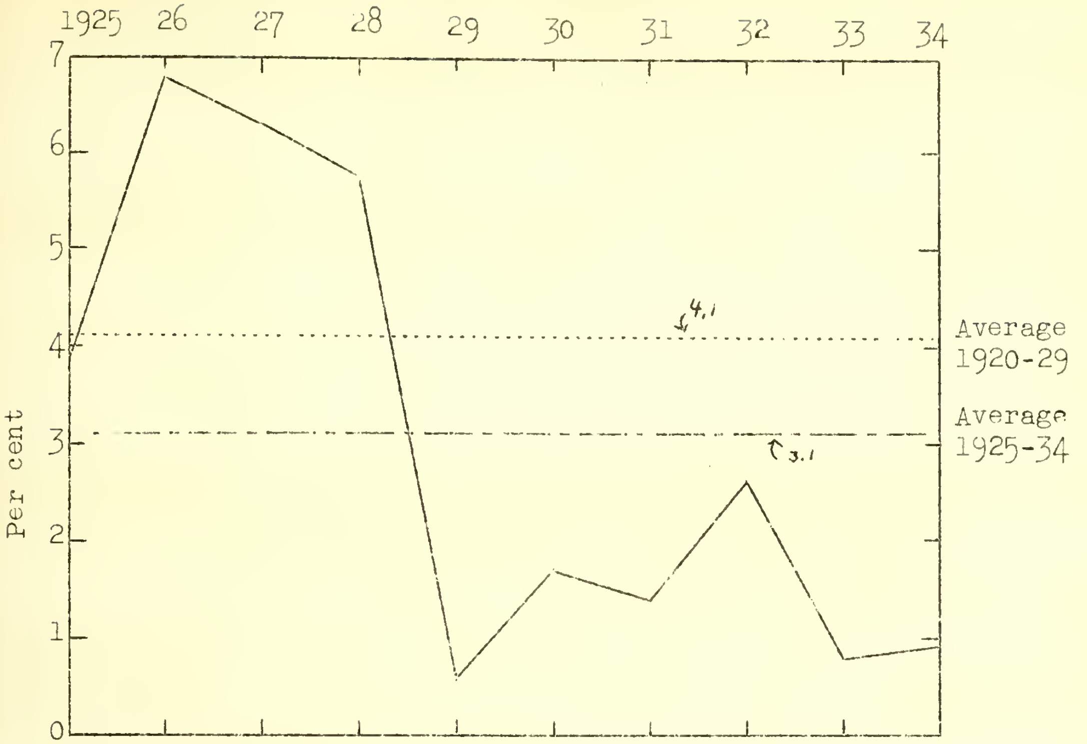

Fig. 10. POTATO: Losses from late blight, 1925-34 and averages for the 10-year periods 1920-29 and 1925-34.

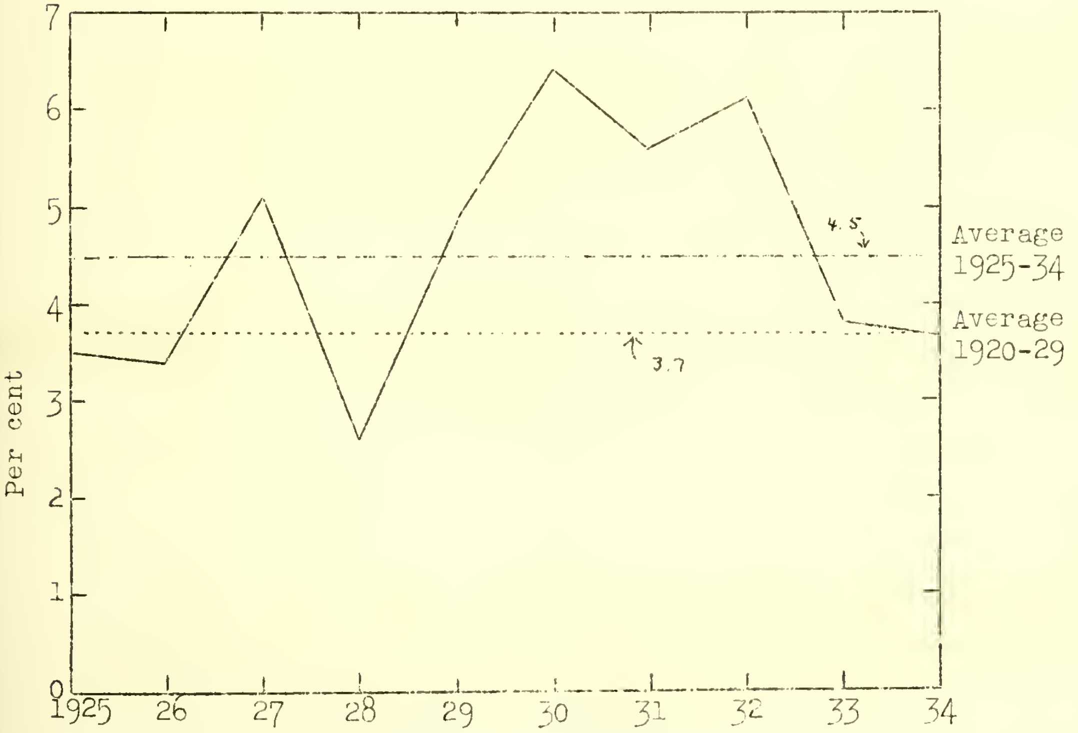

Fig. 11. POTATO: Losses from tipburn and hopperburn, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

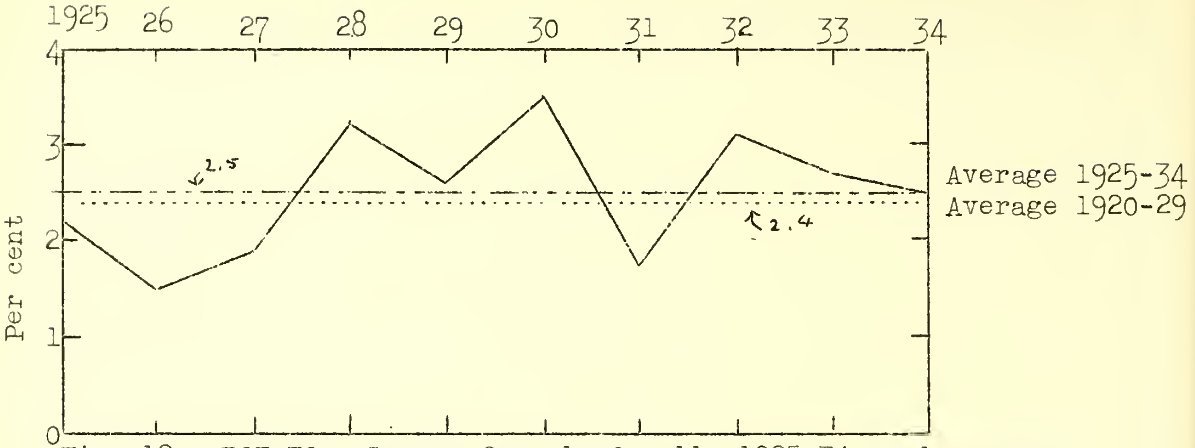

Fig. 12. POTATO: Losses from leaf roll, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

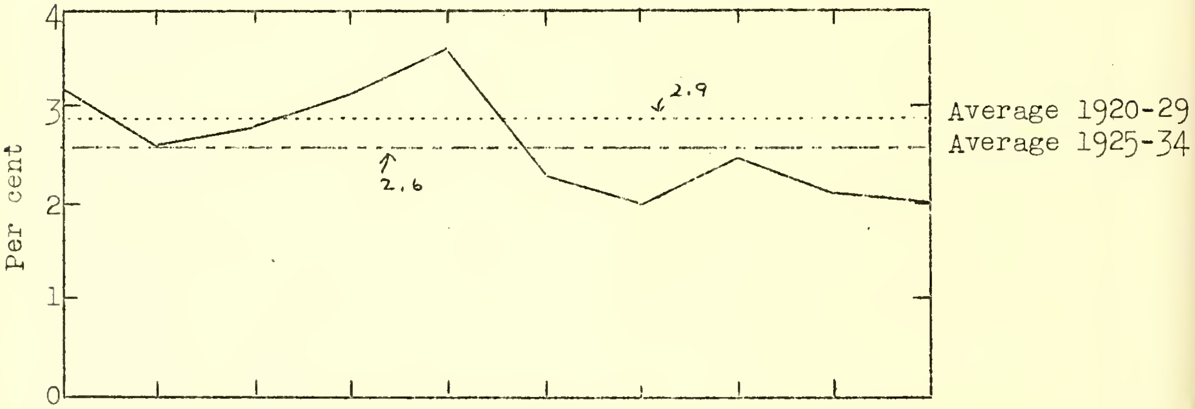

Fig. 13. POTATO: Losses from mosaic, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

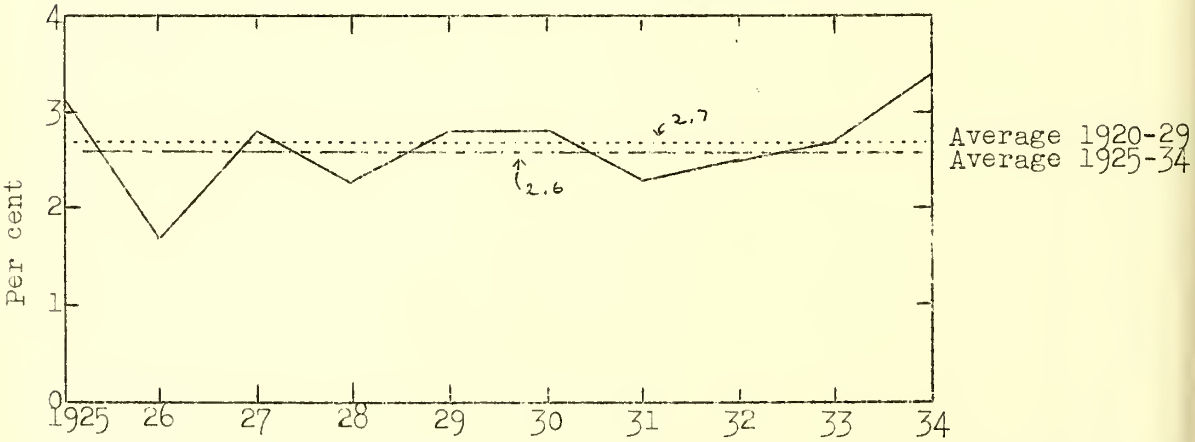

Fig. 14. POTATO: Losses from Rhizoctonia, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

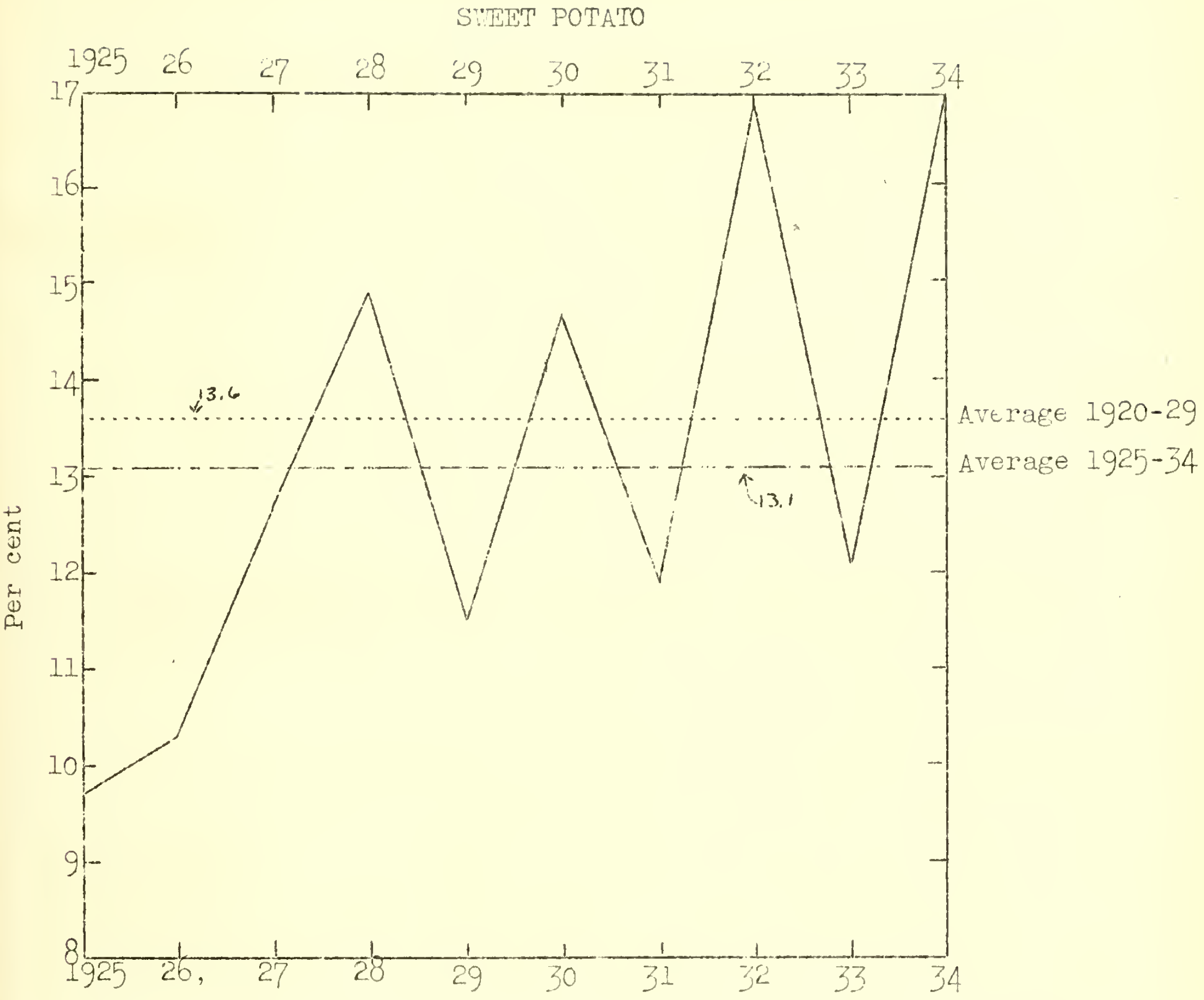

Fig. 15. SWEET POTATO: Losses from storage rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

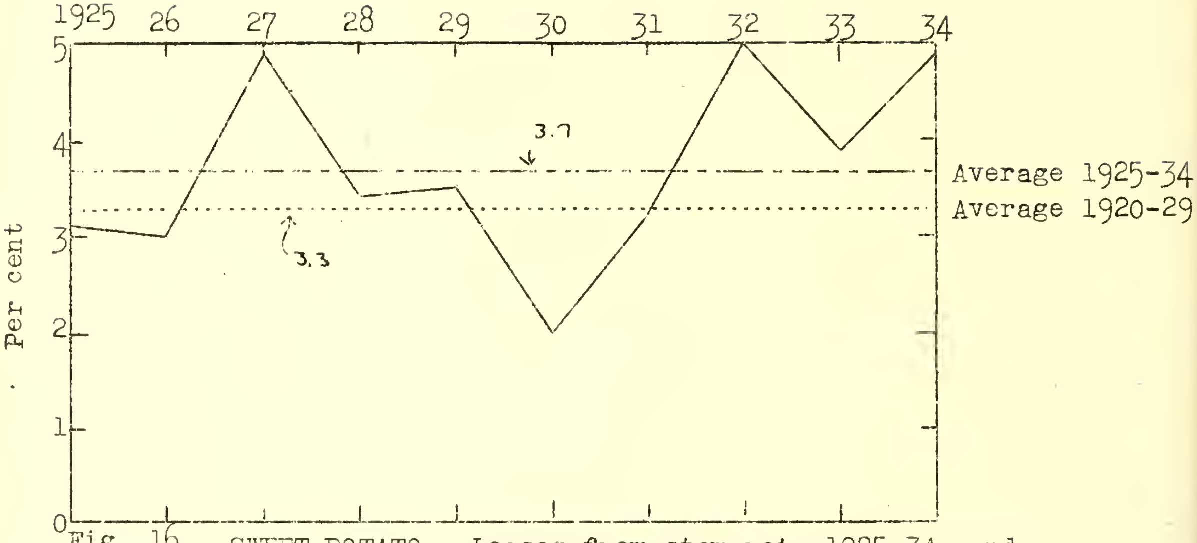

Fig. 16. SWEET POTATO: Losses from stem rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

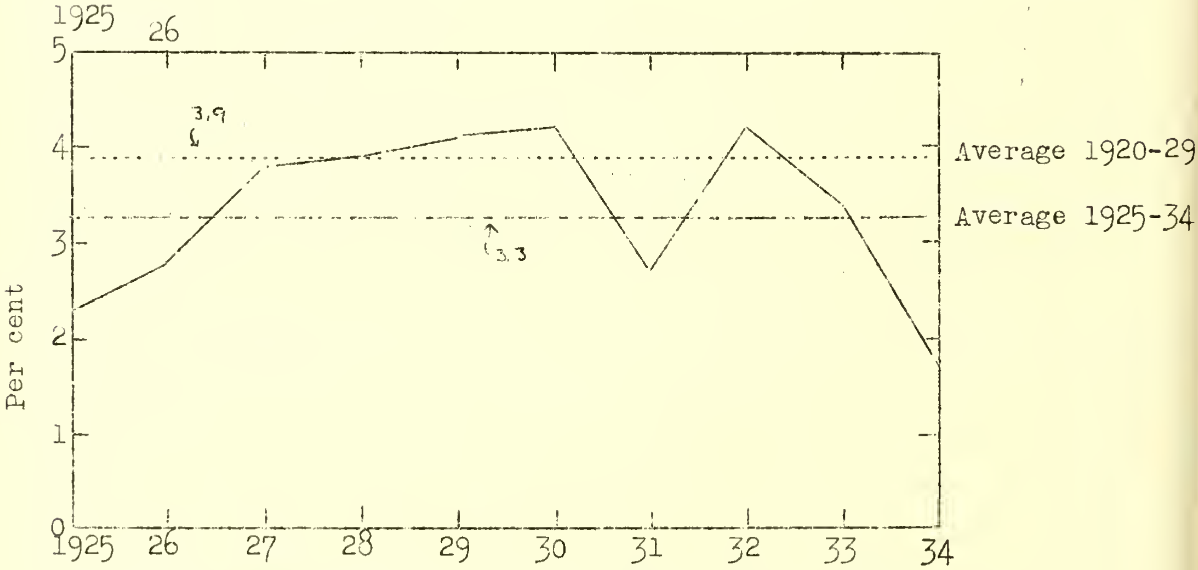

Fig. 17. SWEET POTATO: Losses from black rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

APPLE

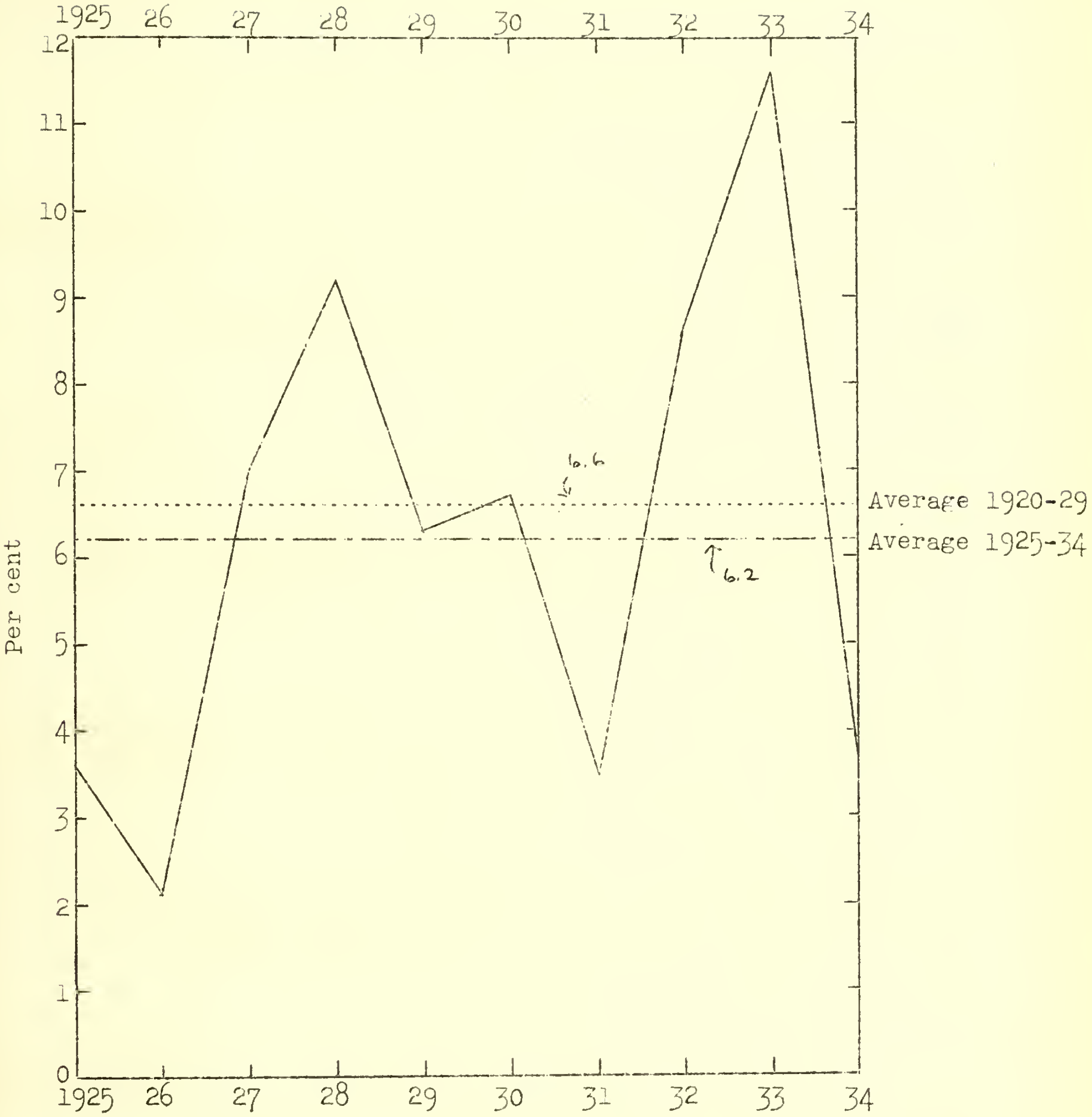

Fig. 18. APPLE: Losses from scab, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

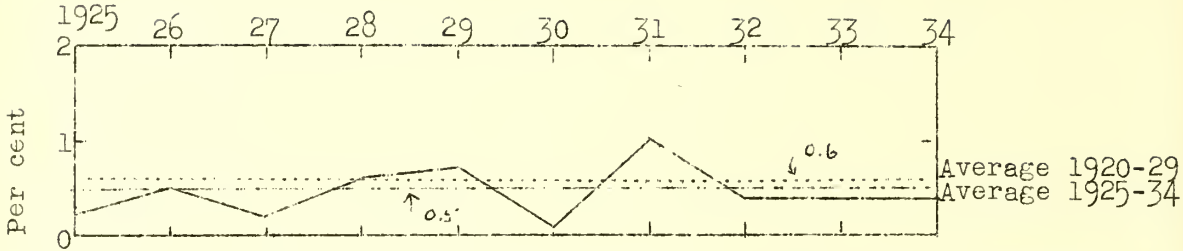

Fig. 19. APPLE: Losses from bitter rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

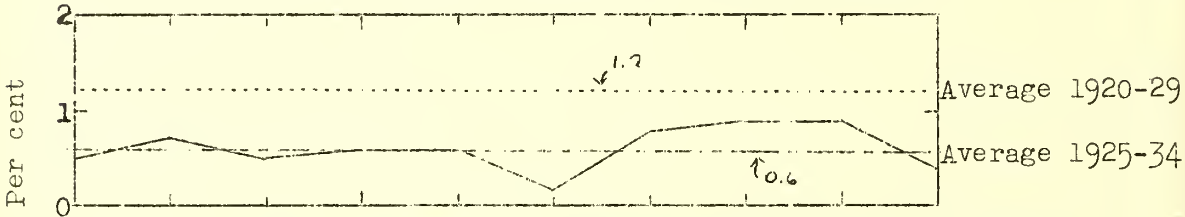

Fig. 20. APPLE: Losses from black rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

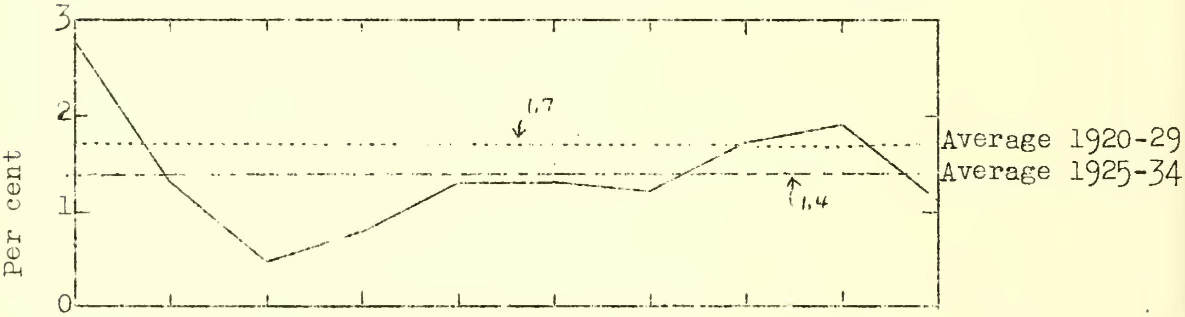

Fig. 21. APPLE: Losses from blight, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

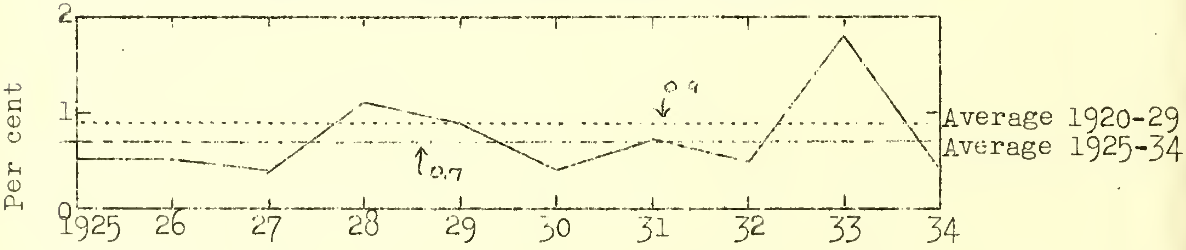

Fig. 22. APPLE: Losses from rust, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

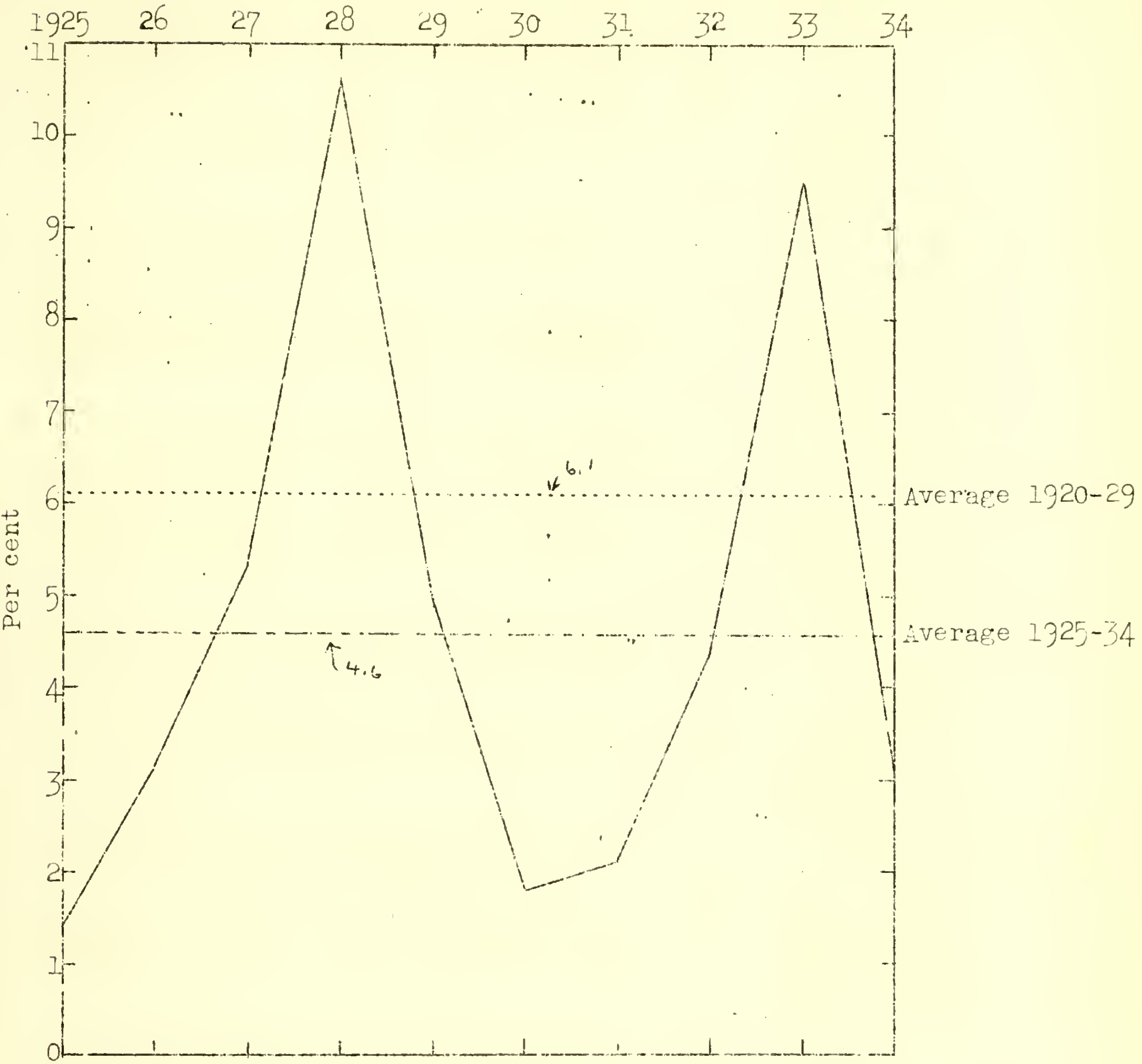

Fig. 23. PEACH: Losses from brown rot, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

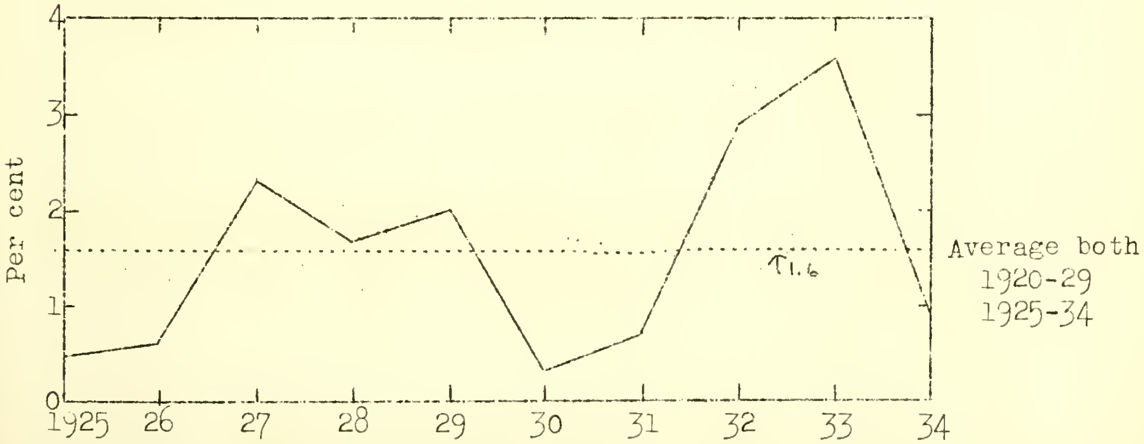

Fig. 24. PEACH: Losses from leaf curl, 1925-34, and averages for the 10-year periods 1920-29 and 1925-34.

1934 - WHEAT

Estimated reduction in yield of wheat due to diseases, 1934

State	Production 1,000 Bushels	Scab		Leaf Rust		Stem Rust		Bunt		Loose Smut		Foot Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Me.	120	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mass.		t	+	10.	+	10.	+	-	-	t	+	t	+	20.	+
N.Y.	4,416	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N.J.	1,127	-	-	-	-	-	-	-	-	1.	11	-	-	1.	.11
Pa.	14,759	0.5	89	10.	1,783	t	+	1.3	232	2.4	428	t	+	17.2	3,067
Ohio	33,401	t	+	0.5	172	t	+	1.5	517	1.	344	t	+	3.	1,033
Ind.	32,152	-	-	0	0	0	0	1.	328	1.	328	-	-	2.	656
Ill.	29,495	t	+	2.	622	0	0	0.7	218	1.	311	t	+	5.2	1,618
Mich.	11,120	0	0	t	+	0	0	2.5	291	1.5	175	t	+	4.5	524
Wis.	1,647	t	+	t	+	0	0	t	+	t	+	t	+	1.	17
Minn.	12,534	0	0	t	+	5.	678	0.5	68	1.	136	1.	136	7.5	1,018
Iowa	3,028	0	0	-	-	0	0	0	0	t	+	-	-	t	+
Mo.	21,281	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. D.	21,196	t	+	t	+	2.	448	1.5	336	0.4	90	0.5	112	5.4	1,210
S. D.	598	-	-	-	-	t	+	-	-	-	-	-	-	-	-
Nebr.	15,838	-	-	-	-	t	+	-	-	-	-	-	-	-	-
Kans.	79,700	0	0	t	+	t	+	1.	810	0.3	243	0.3	243	1.6	1,296
Del.	1,539	1.	16	-	-	-	-	t	+	-	-	-	-	1.	16
Md.	7,934	5.	448	t	+	0	0	3.	269	1.5	134	-	-	11.5	1,030
Va.	8,092	2.	165	-	-	-	-	-	-	-	-	-	-	2.	165
W. Va.	1,974	1.	23	5.	116	-	-	3.	70	2.	46	-	-	15.	348
N. C.	4,340	2.	107	5.	268	t	+	3.	161	1.	54	3.	161	19.	1,019
S. C.	765	-	-	15.	143	3.	29	0.5	5	1.	10	-	-	19.5	187
Ga.	756	-	-	12.	112	-	-	-	-	3.	28	4.	37	19.	177

1934 - Wheat (continued)

State	Production 1,000 Bushels	Estimated reduction in yield of wheat due to diseases													
		Scab		Leaf Rust		Stem Rust		Bunt		Loose Smut		Foot Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Ky.	4,250	-	-	-	-	0	0	-	-	-	-	-	-	-	-
Tenn.	3,392	t	+	-	-	t	+	-	-	4.	141	-	-	4.	141
Ala.	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	297	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	37,348	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	25,749	t	+	5.	1,423	1.	285	1.	285	1.	285	0.5	142	9.5	2,705
Mont.	28,174	0	0	t	+	0	0	3.	916	0.7	214	4.	1,221	7.7	2,351
Idaho	18,696	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	1,041	-	-	t	+	0	0	1.	11	2.	21	-	-	3.	32
Colo.	5,776	t	+	0	0	0	0	t	+	-	-	t	+	1.	58
N. Mex.	711	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utah	3,147	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	336	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	37,346	0	0	t	+	t	+	1.5	572	t	+	t	+	2.	763
Oreg.	12,944	0	0	6.	878	t	+	2.	293	t	+	3.	439	11.5	1,683
Calif.	8,384	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	496,469	0.2	848	1.1	5,517	0.3	1,440	1.	5,332	0.6	2,999	0.5	2,491	4.2	21,125

1934 - BARLEY

Estimated reduction in yield of barley due to diseases, 1934

State	Production: 1,000 Bushels	Estimated reduction in yield of barley due to diseases							
		Stripe		Spot Blotch		Loose Smut		Covered Smut	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	120	-	-	-	-	-	-	-	-
Vt.	108	-	-	-	-	-	-	-	-
Mass.		t	+	-	-	t	+	t	+
N.Y.	3,969	-	-	-	-	-	-	-	-
N.J.	27	-	-	-	-	-	-	-	-
Pa.	1,734	1.7	35	1.5	31	3.3	68	5.6	115
Ohio	332	-	-	-	-	1.	3	1.	3
Ind.	273	-	-	-	-	-	-	-	-
Ill.	884	t	+	t	+	t	+	t	+
Mich.	3,384	0	0	t	+	0.5	17	0.5	17
Wis.	19,266	0.5	101	t	+	2.5	506	t	+
Minn.	24,115	0.5	128	t	+	1.	255	1.	255
Iowa	5,712	t	+	1.	58	1.	58	t	+
Mo.	220	-	-	-	-	-	-	-	-
N. D.	7,119	0.2	15	t	+	0.5	36	0.6	44
S. D.	1,778	-	-	-	-	-	-	-	-
Nebr.	2,700	-	-	-	-	-	-	-	-
Kans.	1,988	t	+	-	-	0.3	6	t	+
Del.		-	-	-	-	-	-	t	+
Md.	627	0.5	3	-	-	1.	7	5.	35
Va.	882	-	-	-	-	-	-	-	-
W. Va.	80	1.	1	-	-	2.	2	2.	2
N. C.	272	2.	6	1.	3	5.	16	0.5	2
S. C.		t	+	-	-	-	-	-	-
Ga.		-	-	-	-	-	-	7.	+
Ky.	210	-	-	-	-	-	-	-	-
Tenn.	323	-	-	-	-	-	-	-	-
Okla.	1,265	-	-	-	-	-	-	-	-
Tex.	2,457	0.1	3	t	+	1.	26	1.	26
Mont.	2,214	1.	23	t	+	1.	23	2.	46
Idaho	4,288	-	-	-	-	-	-	-	-
Wyo.	774	1.	8	-	-	2.	16	1.	8
Colo.	3,024	t	+	-	-	t	+	t	+
N. Mex.	120	-	-	-	-	-	-	-	-
Ariz.	638	-	-	-	-	-	-	-	-
Utah	837	-	-	-	-	-	-	-	-
Nev.	140	-	-	-	-	-	-	-	-
Wash.	1,770	-	-	-	-	-	-	-	-
Oreg.	2,597	-	-	t	+	-	-	0.2	5
Calif.	22,682	-	-	-	-	-	-	-	-
U. S.	118,929	0.4	323	0.1	92	1.3	1,039	0.7	558

1934 - Barley (continued)

State	Estimated reduction in yield due to diseases							
	Scab		Stem Rust		Other Diseases		All Diseases	
	%	1,000 Bushels	%	1,000 Bushels	$	1,000 Bushels	%	1,000 Bushels
Maine	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-
Mass.	0	0	2.	+	-	-	5.	+
N.Y.	-	-	-	-	-	-	-	-
N.J.	-	-	-	-	-	-	-	-
Pa.	0.5	10	t	+	3.	62	15.6	321
Ohio	2.	7	0.1	1	0.6	2	4.7	16
Ind.	-	-	0	0	-	-	-	-
Ill.	1.	9	0	0	t	+	1.	9
Mich.	t	+	0.5	17	0.2	7	1.7	58
Wis.	1.8	364	t	+	-	-	4.8	971
Minn.	t	+	2.	510	1.	255	5.5	1,403
Iowa	0	0	t	+	-	-	2.	116
Mo.	-	-	-	-	-	-	-	-
N. D.	0	0	t	+	1.	73	2.3	168
S. D.	-	-	t	+	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-
Kans.	-	-	-	-	-	-	0.3	6
Del.	-	-	-	-	-	-	t	+
Md.	3.	21	-	-	0.5	3	10.	69
Va.	-	-	-	-	-	-	-	-
W. Va.	-	-	-	-	2.	2	7.	7
N. C.	2.	6	t	+	3.	9	13.5	42
S. C.	-		-	-	-	-	t	+
Ga.	-		-	-	5.	+	12.	+
Ky.	-	-	-	-	-	-	-	-
Tenn.	-	-	-	-	-	-	-	-
Okla.	-	-	-	-	-	-	-	-
Tex.	0.1	3	0.1	3	2.	51	4.3	112
Mont.	0	0	0	0	-	-	4.	92
Idaho	-	-	-	-	-	-	-	-
Wyo.	-	-	0	0	-	-	4.	32
Colo.	-	-	0	0	-	-	t	+
N. M.	-	-	-	-	-	-	-	-
Ariz.	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	-	-	-	-
Wash.	0	0	-	-	-	-	-	-
Oreg.	-	-	t	+	4.	108	4.2	113
Calif.	-	-	-	-	-	-	-	-
U. S.	0.5	420	0.7	531	0.7	572	4.4	3,535

1934 - RYE

Estimated reduction in yield of rye due to diseases, 1934

State	Production 1,000 Bushels	Smut %	Smut 1,000 Bushels	Ergot %	Ergot 1,000 Bushels	Leaf Rust %	Leaf Rust 1,000 Bushels	Stem Rust %	Stem Rust 1,000 Bushels	Other Diseases %	Other Diseases 1,000 Bushels	All Disease %	All Disease 1,0 Bus el
Mass.		0	0	1.	+	2.	+	4.	+	-	-	7.	+
N.Y.	250	-	-	-	-	-	-	-	-	-	-	-	-
N.J.	342	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	1,344	t	+	t	+	6.	91	t	+	5.	76	11.	1
Ohio	819	-	-	0.1	1	1.	8	0	0	1.	8	2.1	
Ind.	1,495	-	-	-	-	-	-	0	0	-	-	-	-
Ill.	630	3.2	21	t	+	0.3	2	t	+	1.	7	4.5	
Mich.	1,314	0	0	t	+	t	+	t	+	t	+	0.3	
Wis.	1,768	t	+	1.	18	t	+	t	+	t	+	1.	
Minn.	2,474	t	+	t	+	0	0	0	0	t	+	t	+
Iowa	348	-	-	-	-	-	-	0	0	-	-	-	-
Mo.	120	-	-	-	-	-	-	-	-	-	-	-	-
N.D.	1,030	0	0	0.6	6	0	0	t	+	0.5	5	1.1	
S.D.	328	-	-	-	-	-	-	0	0	-	-	-	-
Nebr.	728	-	-	-	-	-	-	0	0	-	-	-	-
Kans.	176	-	-	-	-	-	-	-	-	-	-	-	-
Del.	90	-	-	-	-	t	+	-	-	-	-	t	+
Md.	300	-	-	-	-	-	-	-	-	-	-	-	-
Va.	550	-	-	-	-	-	-	-	-	-	-	-	-
W.Va.	120	t	+	t	+	t	+	-	-	-	-	t	+
N.C.	495	-	-	-	-	t	+	-	-	5.	26	5.	
S.C.	60	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	84	-	-	-	-	1.	1	-	-	-	-	1.	
Ky.	138	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	82	2.	2	-	-	-	-	-	-	-	-	2.	
Okla.	54	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	33	t	+	0	0	1.	+	1.	+	0.5	+	2.5	
Mont.	210	-	-	-	-	-	-	0	0	-	-	-	-
Idaho	36	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	72	-	-	-	-	-	-	0	0	-	-	-	-
Colo.	176	-	-	t	+	-	-	0	0	-	-	t	+
Utah	15	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	119	0	0	-	-	-	-	-	-	-	-	-	-
Oreg.	240	-	-	t	+	0.3	+	-	-	0.2	+	0.5	
U. S.	16,040	0.2	23	0.2	25	0.9	102	t	+	1.1	122	2.5	27

Estimated reduction in yield of oats due to diseases, 1934

State	Production	Estimated reduction in yield due to diseases							
		Smuts		Stem rust		Crown Rust		All diseases	
	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	4,680	-	-	-	-	-	-	-	-
N. H.	273	-	-	-	-	-	-	-	-
Vt.	1,769	-	-	-	-	-	-	-	-
Mass.	160	15.	29	2.	4	t	+	17.	33
R. I.	64	-	-	-	-	-	-	-	-
Conn.	300	-	-	-	-	-	-	-	-
N. Y.	23,408	-	-	-	-	-	-	-	-
N. J.	1,452	-	-	-	-	-	-	-	-
Pa.	24,915	8.9	2,531	t	+	0.5	142	12.4	3,526
Ohio	25,994	2.	537	0.5	134	0.5	134	3.1	832
Ind.	18,225	-	-	0	0	-	-	-	-
Ill.	33,319	4.5	1,813	0.5	201	0.5	201	17.3	6,969
Mich.	28,717	2.	590	0.5	147	0	0	2.6	766
Wis.	65,352	5.	3,443	0.1	69	t	+	5.1	3,512
Minn.	72,703	2.	1,564	5.	3,909	0	0	7.	5,473
Iowa	61,250	4.	2,552	t	+	0	0	4.	2,552
Mo.	13,585	-	-	-	-	-	-	-	-
N. D.	8,886	0.5	45	t	+	t	+	1.5	135
S. D.	3,384	-	-	t	+	-	-	-	-
Nebr.	8,568	-	-	t	+	-	-	-	-
Kans.	16,094	2.	328	0	0	0	0	2.	328
Del.	132	t	+	-	-	t	+	t	+
Md.	1,320	5.	69	t	+	t	+	5.	69
Va.	2,398	3.	74	-	-	-	-	3.	74
W. Va.	2,052	5.	114	-	-	2.	46	10.	228
N. C.	3,519	5.	196	1.	39	1.	39	10.	391
S. C.	6,596	10.	785	1.	79	5.	393	16.	1,257
Ga.	6,384	5.	340	-	-	1.	68	6.	408
Fla.	104	-	-	-	-	-	-	-	-
Ky.	1,650	-	-	-	-	-	-	-	-
Tenn.	1,335	-	-	-	-	-	-	-	-
Ala.	2,090	-	-	-	-	-	-	-	-
Miss.	651	-	-	-	-	-	-	-	-
Ark.	2,046	2.	44	t	+	5.	110	7.	154
La.	500	-	-	-	-	-	-	-	-
Okla.	20,150	-	-	-	-	-	-	-	-
Texas	32,466	3.	1,353	4.	1,804	20.	9,018	28.	12,626
Mont.	7,344	5.	387	0	0	0	0	5.	387
Idaho	4,488	-	-	-	-	-	-	-	-
Wyo.	1,743	2.	36	t	+	-	-	2.	36
Colo.	2,280	t	+	0	0	t	+	t	+
N. M.	345	-	-	-	-	-	-	-	-
Ariz.	288	-	-	-	-	-	-	-	-
Utah	832	-	-	-	-	-	-	-	-
Nev.	46	-	-	-	-	-	-	-	-
Wash.	6,800	t	+	t	+	-	-	t	+
Oreg.	5,904	0.4	53	10.	1,324	35.	4,633	55.4	7,334
Calif.	2,254	-	-	-	-	-	-	-	-
U. S.	528,815	3.6	16,883	1.7	7,710	3.2	14,784	10.1	47,090

Estimated reduction in yield of field corn due to diseases, 1934

State	Production 1,000 Bushels	Estimated reduction in yield dur to diseases													
		Smut		Root Rots		Ear Rots (except Diplodia)		Stalk Rots (except Diplodia)		Diplodia		Bacterial Wilt		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	656	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. H.	615	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vt.	2,814	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mass.	1,517	2.	32	2.	32	t	+	t	+	1.	16	t	+	5.	80
R. I.	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conn.	2,132	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Y.	21,286	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. J.	7,138	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	52,896	5.	3,306	t	+	10.	6,612	5.	3,306	t	+	t	+	20.	13,224
Ohio	92,200	3.	2,927	0.5	488	-	-	-	-	2.	1,951	-	-	5.5	5,366
Ind.	94,141	1.	1,029	1.	1,029	4.5	4,630	t	+	2.	2,058	t	+	8.5	8,746
Ill.	146,760	8.	20,243	4.	10,121	13.5	34,160	15.	37,955	1.5	3,796	t	+	42.	106,275
Mich.	33,408	4.	1,411	0.5	176	0.2	71	-	-	0.3	106	0.1	35	5.3	1,870
Wis.	73,904	3.	2,584	0.1	86	1.	861	9.9	8,527	0.1	86	0	0	14.2	12,230
Minn.	76,619	4.	3,368	t	+	5.	4,210	+	+	+	+	0	0	9.	7,578
Iowa	201,480	7.	16,400	-	-	3.	7,028	-	-	4.	9,371	-	-	14.	32,799
Mo.	26,482	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. D.	4,904	2.	102	-	-	0.5	25	1.	51	-	-	0	0	3.5	178
S. D.	12,722	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	21,363	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	10,576	1.	108	1.	108	t	+	t	+	-	-	t	+	2.	216
Del.	4,864	t	+	1.	49	-	-	-	-	-	-	-	-	1.	49
Md.	16,995	t	+	10.	1,999	5.	1,000	-	-	-	-	0	0	15.	2,999
Va.	35,794	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W. Va.	12,128	3.	413	2.	276	3.	413	3.	413	1.	138	t	+	12.	1,653

1934 - Field Corn (Continued)

State	Production 1,000 Bushels	Estimated reduction in yield due to diseases													
		Smut		Root Rots		Ear Rots (except Diplodia)		Stalk Rots (except Diplodia)		Diplodia		Bacterial Wilt		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
N. C.	47,580	1.	547	3.	1,641	3.	1,641	1.	547	-	-	-	-	13.	7,111
S. C.	20,760	0.5	116	5.	1,160	5.	1,160	+	+	+	+	0	0	10.5	2,436
Ga.	39,270	5.	2,206	-	-	3.	1,324	3.	1,324	-	-	-	-	11.	4,854
Fla.	6,390	0.5	43	0.5	43	7.	600	3.	257	7.	600	1.	86	25.5	2,187
Ky.	62,832	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	58,894	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	47,950	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	40,121	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	15,398	1.	156	-	-	-	-	-	-	-	-	-	-	1.	156
La.	16,248	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okla.	11,644	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	45,873	1.	494	0.1	49	0.5	247	1.	494	1.	494	3.	1,481	7.	3,506
Mont.	665	t	+	-	-	0	0	0	0	t	+	0	0	1.	7
Idaho	1,520	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	655	1.	7	-	-	-	-	-	-	-	-	-	-	1.	7
Colo.	3,368	1.	34	-	-	-	-	-	-	-	-	-	-	1.	34
N. M.	1,088	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utah	304	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	1,122	t	+	0	0	0	0	-	-	-	-	0	0	t	+
Oreg.	1,852	-	-	0.1	2	-	-	-	-	-	-	-	-	0.5	9
Calif.	2,850	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	1,380,718	4.6	55,526	1.4	17,259	5.2	63,982	4.3	52,874	1.5	18,616	0.1	1,602	17.5	213,570

1934 - SWEET CORN

Estimated reduction in yield of sweet corn due to diseases, 1934

State	*Production Short Tons	Estimated reduction in yield due to diseases							
		Smut		Bacterial Wilt		Diplodia		All Diseases	
		%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons
Maine	39,200	-	-	0	0	-	-	t	+
N. H.	2,200	-	-	-	-	-	-	-	-
Vt.	2,800	-	-	-	-	-	-	-	-
Mass.		5.	+	1.	+	2.	+	8.	+
N. Y.	33,600	4.	1,400	t	+	-	-	4.	1,400
Pa.	9,200	5.	667	20.	2,667	5.	667	31.	4,134
Ohio	39,900	1.	416	3.	1,247	-	-	4.	1,663
Ind.	50,000	-	-	5.	2,632	-	-	5.	2,632
Ill.	89,200	-	-	5.	4,695	-	-	5.	4,695
Mich.	4,500	1.	47	3.	141	t	+	4.2	197
Wis.	27,400	5.	1,457	t	+	1.	291	6.	1,748
Minn.	81,300	5.	4,371	0	0	1.	874	7.	6,119
Iowa	51,300	-	-	-	-	-	-	-	-
N. D.		2.	+	0	0	0	0	3.	+
Nebr.	1,200	-	-	-	-	-	-	-	-
Kans.				t	+			t	+
Del.	6,000	t	+	-	-	-	-	1.	60
Md.	43,600	1.	493	1.5	739	9.	4,434	11.5	5,666
W. Va.		2.	+	5.	+	3.	+	12.	+
Tenn.	5,300	-	-	-	-	-	-	-	-
Texas		1.	+	3.	+	1.	+	7.1	+
Mont.		t	+	0	0	0	0	1.	+
Colo.		2.	+	-	-	-	-	2.	+
Oreg.		-	-	-	-	-	-	t	+
**Other States	8,900	-	-	-	-	-	-	-	-
U. S.	495,600	2.	8,851	2.7	12,121	1.4	6,266	6.3	28,314

*Production figures are of sweet corn for manufacture.

**Other States include: Colorado, Idaho, Kansas, Kentucky, Missouri, Montana, Oklahoma, Oregon, South Dakota, Virginia, Washington, Wyoming.

1934 - SWEET POTATO

Estimated reduction in yield due to diseases

State	Production 1,000 Bushels	Estimated reduction in yield due to diseases							
		Stem Rot		Black Rot		All Diseases		Storage Rots	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Conn.		-	-	t	+	t	+	-	-
N. J.	2,015	-	-	-	-	-	-	-	-
Pa.		-	-	t	+	1.	+	2.	+
Ind.	440	30.	189	t	+	30.	189	-	-
Ill.	560	-	-	-	-	-	-		
Iowa.	180	20.	46	2.	5	22.	51	-	-
Mo.	561	-	-	-	-	-	-	-	-
Kans.	325	7.	25	1.	4	8.	29	2.	7
Del.	810	1.	8	0.5	4	3.5	29	-	-
Md.	750	1.5	12	t	+	7.	56	11.	83
Va.	3,910	7.	301	1.	43	9.	387	5.	196
W. Va.		-	-	t	+	t	+	-	-
N. C.	8,856	3.	295	2.	197	10.	984	20.	1,771
S. C.	4,428	t	+	t	+	t	+	30.	1,328
Ga.	7,120	-	-	-	-	-	-	-	-
Fla.	1,800	1.	22	5.	110	18.	395	20.	360
Ky.	1,805	-	-	-	-	-	-	-	-
Tenn.	6,180	15.	1,091	t	+	15.	1,091	-	-
Ala.	7,614	-	-	-	-	-	-	-	-
Miss.	7,526	-	-	-	-	-	-	-	-
Ark.	1,620	2.	34	2.	34	4.	68	10.	162
La.	5,840	1.	60	t	+	2.	120	-	-
Okla.	770	-	-	-	-	-	-	-	-
Tex.	3,300	0.5	20	8.	324	18.5	749	10.	330
Colo.		t	+	-	-	t	+	t	+
Calif.	990	-	-	-	-	-	-	-	-
U. S.	67,400	4.9	2,103	1.7	721	9.7	4,148	17.	4,237

1934 - POTATO

Estimated reduction in yield of potato due to diseases

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases							
		Mosaic		Leaf Roll		Late Blight		Rhizoctonia	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	56,280	2.	1,324	1.5	993	1.	662	7.5	4,966
N. H.	1,665	-	-	-	-	-	-	-	-
Vt.	2,720	-	-	-	-	-	-	-	-
Mass.	2,560	5.	191	5.	191	4.	153	7.	267
R. I.	540	-	-	-	-	-	-	-	-
Conn.	2,625	-	-	-	-	-	-	-	-
N. Y.	32,550	2.	910	3.	1,366	3.	1,366	5.	2,276
N. J.	9,050	-	-	-	-	-	-	-	-
Pa.	34,000	3.	1,407	10.	4,690	2.	938	3.	1,407
Ohio	11,445	-	-	5.	728	t	+	2.	291
Ind.	6,200	-	-	-	-	-	-	-	-
Ill.	2,704	-	-	-	-	0	0	-	-
Mich.	34,304	0.5	211	1.	421	0	0	1.	421
Wis.	31,320	t	+	0	0	0	0	t	+
Minn.	23,380	5.	1,601	+	+	0	0	4.	1,281
Ia.	4,851	-	-	-	-	-	-	3.	167
Mo.	1,380	-	-	-	-	-	-	-	-
N. D.	5,940	1.	63	1.	63	0	0	0.6	38
S. D.	1,290	-	-	-	-	0	0	-	-
Nebr.	3,450	-	-	-	-	0	0	-	-
Kans.	1,480	t	+	-	-	0	0	5.	80
Del.	720	0.5	4	+	+	-	-	t	+
Md.	3,267	2.	75	2.	75	1.5	56	4.	150
Va.	13,433	2.	299	2.	299	0	0	t	+
W. Va.	3,120	4.	184	5.	229	t	+	6.	275
N. C.	10,672	2.	248	3.	372	t	+	2.	248
S. C.	2,625	t	+	0	0	0	0	3.	82
Ga.	1,360	3.	52	-	-	0	0	5.	87
Fla.	3,250	1.	39	+	+	6.	234	4.	156
Ky.	4,480	-	-	-	-	-	-	-	-
Tenn.	4,320	-	-	-	-	0	0	-	-
Ala.	3,760	-	-	-	-	-	-	-	-
Miss.	1,344	-	-	-	-	-	-	-	-
Ark.	2,624	-	-	-	-	0	0	-	-
La.	2,948	3.	95	-	-	0	0	1.	32
Okla.	2,760	-	-	-	-	0	0	-	-
Tex.	3,780	0.1	4	t	+	t	+	2.	87
Mont.	1,610	5.	95	t	+	0	0	5.	95
Idaho	19,240	-	-	-	-	0	0	-	-
Wyo.	1,000	2.	35	-	-	0	0	2.	35
Colo.	5,700	t	+	t	+	0	0	2.5	153
N. M.	490	-	-	-	-	0	0	-	-
Ariz.	180	-	-	-	-	0	0	-	-
Utah	1,040	-	-	-	-	0	0	-	-
Nev.	210	-	-	-	-	0	0	-	-
Wash.	7,290	7.5	591	+	+	t	+	t	+
Oreg.	5,720	-	-	-	-	-	-	-	-
Calif.	8,610	-	-	-	-	-	-	-	-
U. S.	385,287	2.	7,428	2.5	9,427	0.9	3,409	3.4	12,594

1934 - POTATO (Continued)

State	Estimated reduction in yield due to diseases											
	Blackleg		Fusarium Wilt		Tipburn and Hopperburn		Early Blight		Scab		All Diseases	
	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	1.	662	0	0	0	0	-	-	2.	1,324	15.	9,931
N.H.	1.	17	-	-	-	-	-	-	-	-	1.	17
Vt.	-	-	-	-	-	-	-	-	-	-	-	
Mass.	t	+	t	+	8.	306	2.	76	1.	38	33.	1,260
R.I.	-	-	-	-	-	-	-	-	-	-	-	-
Conn.	-	-	-	-	-	-	-	-	-	-	-	-
N.Y.	t	+	t	+	10.	4,552	t	+	3.	1,366	28.5	12,974
N.J.	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	t	+	2.	938	3.	1,407	t	+	0.5	234	27.5	12,897
Ohio	0.2	29	1.5	218	8.	1,165	2.	291	0.5	73	21.4	3,115
Ind.	-	-	-	-	-	-	-	-	-	-	-	-
Ill.	-	-	-	-	-	-	-	-	-	-	-	
Mich.	2.	843	1.6	674	5.	2,107	0.5	211	5.	2,107	18.6	7,838
Wis.	0	0	0	0	t	+	0	0	5.	1,666	6.	1,999
Minn.	t	+	4.	1,281	8.	2,562	2.	641	2.	641	27.	8,648
Iowa	-	-	-	-	-	-	-	-	10.	558	13.	725
Mo.	-	-	-	-	-	-	-	-	-	-	-	-
N. D.	1.	63	1.5	94	0.2	13	t	+	t	+	5.3	334
S. D.	-	-	-	-	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	-	-	-
Kans.	t	+	t	+	-	-	-	-	1.	16	8.	128
Del.	-	-	-	-	-	-	t	+	t	+	1.	8
Md.	t	+	2.	75	0.5	19	0.5	19	t	+	13.	488
Va.	1.	149	t	+	3.	448	t	+	2.	299	10.	1,494
W. Va	2.	92	3.	138	7.	321	t	+	t	+	32.	1,468
N.C.	1.	124	t	+	2.	248	1.	124	-	-	14.	1,736
S.C.	t	+	0	0	-	-	1.5	41	-	-	4.5	123
Ga.	8.	140	-	-	5.	87	1.	17	-		22.	383
Fla.	0.5	19	t	+	0	0	0.5	19	0.5	19	16.5	642
Ky.	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	-	-	t	+	-	-	25.	1,440	-	-	25.	1,440
Ala.	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	-	-	-	-	15.	463	-	-	-	-	15.	463
La.	t	+	-	-	-	-	0.5	16	-	-	6.5	206
Okla.	-	-	-	-	-	-	-	-	-	-	-	-
Tex.	0	0	1.	44	0.5	22	0.5	22	8.	348	13.1	571
Mont.	t	+	2.	38	t	+	t	+	t	+	15.	285
Idaho	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	t	+	3.	53	-	-	t	+	1.	18	43.	755
Colo.	-	-	3.5	215	-	-	t	+	1.	61	7.	429
N.M.	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	-	-	-	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	-
Nev.	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	t	+	t	+	-	-	t	+	t	+	7.5	591
Oreg.	-	-	-	-	-	-	-	-	-	-	-	-
Calif	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	0.6	2,138	1.0	3,768	3.7	13,720	0.8	2,917	2.3	8,768	19.	70,948

1934 - TOMATOES FOR MANUFACTURE

Estimated reduction in yield of tomatoes due to diseases, 1934

State	Production Short Tons*	Estimated reduction in yield due to diseases											
		Septoria Blight		Fusarium Wilt		Early Blight		Blossom-end Rot		Curly-top		All Diseases	
		%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons
N. Y.	119,200	t	+	t	+	1.5	1,912	3.5	4,462	0	0	6.5	8,286
N. J.	122,800	-	-	-	-	-	-	-	-	0	0	-	-
Pa.	34,300	5.	2,287	1.	457	3.	1,372	8.	3,659	0	0	25.	11,434
Ohio	78,500	1.	924	5.	4,618	1.	924	5.	4,618	0	0	15.	13,855
Ind.	315,400	-	-	-	-	2.	6,437	-	-	0	0	2.	6,437
Ill.	11,100	1.	148	5.	740	-	-	1.	148	0	0	25.	3,700
Mich.	17,300	t	+	3.	538	t	+	t	+	0	0	3.5	628
Wis.		t	+	0	0	1.	+	0	0	0	0	1.	+
Iowa	7,700	-	-	-	-	-	-	-	-	0	0	-	-
Mo.	1,400	-	-	-	-	-	-	-	-	0	0	-	-
Del.	51,800	1.	523	t	+	t	+	-	-	0	0	1.	523
Md.	184,100	1.	2,597	0.5	1,298	5.	12,983	t	+	0	0	29.1	75,561
Va.	43,500	t	+	7.	3,460	1.	494	-	-	0	0	12.	5,931
W. Va.		2.	+	2.	+	t	+	3.	+	0	0	10.	+
S. C.		t	+	5.	+	2.	+	5.	+	0	0	15.	+
Ga.		10.	+	3.	+	-	-	-	-	0	0	13.	+
Fla.		0	0	2.	+	3.	+	t	+	0	0	16.	+
Ky.	8,600	-	-	-	-	-	-	-	-	0	0	-	-
Tenn.	16,200	-	-	35.	8,723	-	-	-	-	0	0	35.	8,723
Ark.	1,600	-	-	-	-	-	-	2.	33.	0	0	2.	33
La.		t	+	5.	+	2.	+	1.	+	0	0	14.	+

1934 - TOMATOES FOR MANUFACTURE (Continued)

State	Production Short Tons*	Estimated reduction in yield due to diseases											
		Septoria Blight		Fusarium Wilt		Early Blight		Blossom-end Rot		Curly-top		All Diseases	
		%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons
Tex.		2.	+	3.	+	3.	+	15.	+	0	0	28.	+
Colo.	11,000	t	+	t	+	t	+	t	+	t	+	1.	111
Utah	23,000	-	-	2.	773	-	-	-	-	30.	11,597	40.5	15,656
Wash.		0	0	-	-	-	-	t	+	25.	+	25.	+
Oreg.		0	0	-	-	-	-	-	-	25.	+	25.	+
Calif.	291,500	-	-	-	-	-	-	-	-	-	-	-	-
**Other States	50,600												
U. S.	1,389,600	0.6	6,479	1.9	20,607	2.3	24,122	1.2	12,920	1.1	11,597	14.3	150,878

*Short tons 2000 lbs.

**Including Connecticut, Florida, Georgia, Idaho, Kansas, Louisiana, Mississippi, Nebraska, New Mexico, North Carolina, Oklahoma, Oregon, South Carolina, Texas, Washington, West Virginia, Wisconsin.

1934 - TOMATOES FOR MARKET

Estimated reduction in yield of tomatoes due to diseases, 1934

State	Production 1,000 *Bushels	Septoria Blight %	Septoria Blight 1,000 Bushels	Fusarium Wilt %	Fusarium Wilt 1,000 Bushels	Early Blight %	Early Blight 1,000 Bushels	Blossom-end Rot %	Blossom-end Rot 1,000 Bushels	Curly-top %	Curly-top 1,000 Bushels	All Diseases %	All Diseases 1,000 Bushels
Mass.		t	+	0	0	8.	+	3.	+	0	0	20.5	
N. Y.	1,270	t	+	t	+	1.5	20	3.5	48	0	0	7.	95
N. J.	1,575	-	-	-	-	-	-	-	-	0	0	-	-
Pa.	128	5.	9	1.	2	3.	5	8.	14	0	0	25.	44
Ohio	466	1.	5	5.	27	1.	5	5.	27	0	0	13.	69
Ind.	442	-	-	-	-	2.	9	-	-	0	0	2.	9
Ill.	214	1.	3	5.	14	-	-	1.	3	0	0	25.	71
Mich.	390	t	+	3.	12	t	+	t	+	0	0	3.5	14
Wis.		t	+	0	0	1.	+	0	0	0	0	1.	+
Minn.		t	+	t	+	t	+	5.	+	0	0	5.	+
Iowa	35	-	-	-	-	-	-	-	-	0	0	-	-
Mo.	114	-	-	-	-	-	-	-	-	0	0	-	-
N. D.		-	-	t	+	t	+	1.	+	0	0	2.	+
Del.	28	1.	+	t	+	t	+	-	-	0	0	1.	+
Md.	458	1.	6	0.5	3	5.	32	t	+	0	0	29.1	187
Va.	410	t	+	7.	33	1.	5	-	-	0	0	12.	57
W. Va.		2.	+	2.	+	t	+	3.	+	0	0	10.	+
N. C.	69	2.	2	5.	4	1.	1	1.	1	0	0	22.	19
S. C.	80	t	+	5.	5	2.	2	5.	5	0	0	15.	15
Ga.	10	10.	1	3.	+	-	-	-	-	0	0	13.	1
Fla.	2,795	0	0	2.	67	3.	100	t	+	0	0	16.	533
Ky.	132	-	-	-	-	-	-	-	-	0	0	-	-
Tenn.	704	-	-	35.	379	-	-	-	-	0	0	35.	379

1934 - TOMATOES FOR MARKET (Continued)

State	Production 1,000 *Bushels	Estimated reduction in yield due to diseases											
		Septoria Blight		Fusarium Wilt		Early Blight		Blossom-end Rot		Curly-top		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Miss.	1,380	-	-	-	-	-	-	-	-	0	0	-	-
Ark.	81	-	-	-	-	t	+	2.	2	0	0	2.	2
La.	160	t	+	5.	9	2.	4	1.	2	0	0	14.	26
Tex.	3,374	2.	94	3.	141	3.	141	15.	703	0	0	28.	1,313
Mont.		0	0	t	+	0	0	t	+	t	+	t	+
Colo.	238	t	+	t	+	t	+	t	+	t	+	1.	2
Utah	114	-	-	2.	3	-	-	-	-	30.	50	32.	53
Wash.	357	0	0	-	-	-	-	t	+	25.	119	25.	119
Oreg.	166	0	0	-	-	-	-	-	-	25.	55	25.	55
Calif.	2,890	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	18,080	0.8	120	4.7	699	2.2	324	5.4	805	1.5	224	20.5	3,063

*Bushels of 53 pounds.

1934 - SNAP BEANS FOR MARKET

Estimated reduction in yield of snap beans due to diseases, 1934

State	Production 1,000 *Bushels	Estimated reduction in yield due to diseases													
		Anthracnose		Bacterial Blights		Mosaic		Root Rots		Rust		Other Diseases		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Mass.		1.	+	2.	+	3.	+	2.	+	0.5	+	t	+	8.5	+
N. Y.	206	0.5	1	4.	9	t	+	t	+	-	-	-	-	4.5	10
N. J.	1,925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	261	5.	15	2.	6	0.5	2	6.	19	1.	3	1.	3	15.5	48
Ohio		1.	+	3.	+	0.5	+	-	-	-	-	t	+	4.5	+
Ill.	52	1.	+	4.	+	10.	1	-	-	0	0	2.	+	17.	1
Mich.	38	0	0	5.	+	t	+	0.5	+	0	0	t	+	5.5	+
Wis.		0	0	t	+	1.	+	0	0	0	0	-	-	1.	+
Minn.		t	+	1.	+	2.	+	t	+	t	+	1.	+	4.	+
N. D.		t	+	t	+	2.	+	-	-	0	0	-	-	2.	+
Del.	8	t	+	-	-	-	-	0.5	+	-	-	-	-	0.5	+
Md.	218	t	+	1.5	3	0.5	1	2.5	6	-	-	-	-	4.5	10
Va.	385	0	0	1.	4	-	-	2.	8	-	-	t	+	3.	12
W. Va.		3.	+	3.	+	1.	+	3.	+	1.	+	-	-	11.	+
N. C.	816	1.	9	1.	9	2.	19	7.	66	1.	9	2.	19	14.	131
S. C.	540	0	0	1.	6	1.	6	5.	30	t	+	2.	12	9.	54
Ga.	250	3.	9	-	-	-	-	5.	14	5.	14	-	-	13.	37
Fla.	6,376	1.	76	5.	380	t	+	4.	304	1.	76	5.	380	16.	1,216
Tenn.	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1934 - SNAP BEANS FOR MARKET (Continued)

State	Production: 1,000 *Bushels	Estimated reduction in yield due to disease													
		Anthracnose		Bacterial Blight		Mosaic		Root Rots		Rust		Other Diseases		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Ala.	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	321	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La.	585	1.	6	6.	39	-	-	2.	13	-	-	-	-	9.	58
Tex.	395	0	0	5.	22	2.	9	2.	9	t	+	1.	4	10.	44
Mont.		0	0	t	+	4.	+	1.	+	t	+	-	-	5.	+
Colo.	181	0	0	8.	16	2.	4	2.	4	t	+	-	-	12.	24
Wash.		0	0	t	+	t	+	t	+	0	0	15.		15.	
Calif.	754	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	13,486	1.	116	4.1	494	0.4	42	4.	473	0.9	102	3.5	418	13.9	1,645

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* Bushels of 30 pounds.

1934 - SNAP BEANS FOR MANUFACTURE

Estimated reduction in yield of snap beans due to diseases

State	Production Short Tons	Anthracnose %	Anthracnose Short Tons	Bacterial Blight %	Bacterial Blight Short Tons	Mosaic %	Mosaic Short Tons	Root Rots %	Root Rots Short Tons	All Diseases %	All Diseases Short Tons
Maine	2,300	-	-	-	-	-	-	-	-	-	-
N. Y.	12,200	0.5	64	4.	511	t	+	t	+	4.5	575
Pa.	2,000	5.	118	2.	47	0.5	12	6.	142	15.5	367
Ohio		1.	+	3.	+	0.5	+	-	-	4.5	+
Ind.	4,300	-	-	-	-	-	-	-	-	-	-
Ill.		1.	+	4.	+	10.	+	-	-	17.	+
Mich.	5,800	0	0	5.	307	t	+	0.5	31	5.5	338
Wis.	7,800	0	0	t	+	1.	79	0	0	1.	79
Minn.		t	+	1.	+	2.	+	t	+	4.	+
Kans.		0	0	0	0	-	-	-	-	-	-
Del.	1,600	t	+	-	-	-	-	0.5	8	0.5	8
Md.	9,800	t	+	1.5	154	0.5	51	2.5	257	4.5	462
Va.		0	0	1.	+	-	-	2.	+	3.	+
W. Va		3.	+	3.	+	1.	+	3.	+	11.	+
S. C.	300	0	0	1.	3	1.	3	5.	17	9.	30
Ga.		3.	+	-	-	-	-	5.	+	13.	+
Fla.		1.	+	5.	+	t	+	4.	+	16.	+
Tenn.	1,400	-	-	-	-	-	-	-	-	-	-
Miss.	2,100	-	-	-	-	-	-	-	-	-	-
Ark.	1,800	-	-	-	-	-	-	-	-	-	-
La.	600	1.	7	6.	40	-	-	2.	13	9.	60
Tex.		0	0	5.	+	2.	+	2.	+	10.	+
Mont.		0	0	t	+	4.	+	1.	+	5.	+
Idaho		0	0	-	-	3.	+	-	-	3.	+
Wyo.		0	0	3.	+	2.	+	t	+	5.	+
Colo.	1,000	0	0	8.	91	2.	23	2.	23	12.	137
Utah	1,400	0	0	-	-	-	-	-	-	-	-
Wash.	1,700	0	0	t	+	t	+	t	+	15.	300
Oreg.	4,600	0	0	-	-	-	-	-	-	-	-
Calif	2,200	0	0	-	-	-	-	-	-	-	-
*Other States	4,500										
U. S.	67,400	0.4	189	2.6	1,153	0.4	168	1.1	491	5.3	2,356

*Including Alabama, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, Ohio, Oklahoma, Texas, Vermont, Virginia, West Virginia, Wyoming.

1934 - DRY BEANS

Estimated reduction in yield of dry beans due to diseases, 1934

State	Production	Reduction in yield due to diseases									
		Anthracnose		Bacterial Blight		Mosaic		Root Rots		All Diseases	
	*1,000 bags	%	1,000 Bags	%	1,000 Bags	%	1,000 Bags	%	1,000 Bags	%	1,000 Bags
Maine	62	-	-	-	-	-	-	-	-	-	-
Vt.	18	-	-	-	-	-	-	-	-	-	-
N.Y.	891	0.5	5	4.	37	t	+	-	-	4.5	42
Mich.	3,244	0	0	5.	172	t	+	0.5	17	5.5	189
Wis.	23	0	0	t	+	1.	+	0	0	1.	+
Minn.	21	t	+	1.	+	2.	+	t	+	4.	1
Nebr.	68	-	-	-	-	-	-	-	-	-	-
Mont.	174	0	0	t	+	4.	7	1.	2	5.	9
Idaho	1,342	0	0	-	-	3.	42	-	-	3.	42
Wyo.	250	0	0	1.	3	2.	5	t	+	3.	8
Colo.	279	0	0	2.5	8	t	+	5.	15	7.5	23
N. M.	66	0	0	-	-	-	-	-	-	-	-
Ariz.	40	0	0	-	-	-	-	-	-	-	-
Oreg.	6	0	0	-	-	-	-	-	-	-	-
Calif.	3,675	0	0	-	-	-	-	-	-	-	-
U. S.	10,159	t	5	3.4	220	0.8	54	0.5	34	4.8	314

*Bags of 100 pounds.

1934 - GREEN PEAS FOR MARKET

Estimated reduction in yield of green peas for market

State	Production* Bushels	Estimated reduction in yield due to disease									
		Bacterial Blight		Fusarium Wilt		Ascochyta Blight		Root Rots		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Mass.		1.	+	1.	+	1.	+	25.	+	30.	+
N. Y.	456	t	+	t	+	t	+	0.5	2	0.5	2
N. J.	200	-	-	-	-	-	-	-	-	-	-
N. D.		-	-	t	+	0	0	t	+	t	+
Md.	14	0.2	+	0.5	+	0.2	+	3.5	+	4.4	+
Va.	72	-	-	-	-	-	-	-	-	-	-
N. C.	228	1.	3	2.	5	2	5	2.	5	9.	23
S. C.	120	-	-	-	-	-	-	25.	40	25.	40
Ga.		10.	+	-	-	10	+	15.	+	35.	+
Fla.	461	t	+	1.	5	2	10	1.	5	8.	40
Ala.	10	-	-	-	-	-	-	-	-	-	-
Miss.	138	-	-	-	-	-	-	-	-	-	-
La.	64	-	-	-	-	-	-	-	-	-	-
Texas	65	t	+	0	0	0	0	2.	1	3.	2
Idaho	170	-	-	1.	2	-	-	2.	4	3.	6
Colo.	673	3.	22	-	-	3.	22	2.	15	8.	59
Ariz.	126	-	-	-	-	-	-	-	-	-	-
Wash.	798	t	+	t	+	-	-	t	+	t	+
Oreg.	48	-	-	-	-	-	-	-	-	-	-
Calif.	3,849	-	-	-	-	-	-	-	-	-	-
U. S.	7,442	0.8	25	0.4	12	1.2	37	2.3	72	5.5	172

*Bushels of 30 pounds.

1934 - GREEN PEAS FOR MANUFACTURE

Estimated reduction in yield of green peas for manufacture

State	Production	Estimated reduction in yield due to disease									
		Bacterial Blight		Fusarium Wilt		Ascochyta Blight		Root Rots		All Diseases	
	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons	%	Short Tons
Maine	2,330	-	-	-	-	-	-	-	-	-	-
N. Y.	13,280	t	+	t	+	t	+	0.5	67	0.5	67
Pa.	3,000	-	-	t	+	t	+	20.	750	20.	750
Ohio	1,540	-	-	-	-	-	-	1.	16	1.	16
Ind.	2,610	-	-	-	-	-	-	-	-	-	-
Ill.	2,070	1.	22	1.	22	-	-	5.	111	7.	155
Mich.	6,390	0	0	t	+	t	+	1.	65	1.	65
Wis.	71,120	t	+	0.5	359	0	0	0.5	359	1.	718
Minn.	5,800	-	-	-	-	-	-	-	-	-	-
Del.	3,010	-	-	-	-	-	-	-	-	-	-
Md.	14,850	0.2	31	0.5	78	0.2	31	3.5	544	4.4	684
Mont.	2,620	1.	32	0	0	t	+	16.	505	17.	537
Idaho		-	-	1.	+	-	-	2.	+	3.	+
Wyo.		t	+	-	-	t	+	2.	+	2.	+
Colo.	3,430	3.	112	-	-	3.	112	2.	75	8.	299
Utah	11,020	-	-	-	-	-	-	-	-	-	-
Wash.	9,030	t	+	t	+	-	-	t	+	t	+
*Other States	12,670										
U. S.	164,770	0.1	197	0.4	459	0.1	143	1.9	2,492	2.5	3,291

*Including California, Idaho, Iowa, Kansas, Nebraska, New Jersey, Oklahoma, Oregon, Tennessee, Virginia, Wyoming.

1934 - COTTON

Estimated reduction in yield of cotton due to diseases, 1934

State	Production	Estimated reduction in yield due to diseases											
		Anthracnose		Angular Leaf Spot		Wilt		Root Knot		Malnutrition		All Diseases	
	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales	%	1,000 Bales
Ill.		t	+	1.	+	0	0	0	0	-		2.	+
Mo.	245	-	-	-	-	-	-	-	-			-	-
Va.	39	1.	+	1.	+	-	-	-	-	1.	+	3.	.1
N. C.	650	t	+	3.	26	5.	43	3.	26	10.	86	24.	207
S. C.	695	5.	39	2.	16	2.	16	2.	16	-	-	11.	87
Ga.	995	5.	53	1.5	16	-	-	-	-	-	-	6.5	6
Fla.	28	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	412	3.	13	-	-	-	-	-	-	-	-	3.	13
Ala.	965	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	1,145	2.	25	2.	25	3.	37	-	-	-	-	7.5	9
Ark.	875	t	+	1.	10	5.	49	2.	20	3.	29	11.	10
La.	488	2.	12	3.	17	4.	23	-	-	3.	17	16.	9
Okla.	325	-	-	-	-	-	-	-	-	-	-	-	-
Texas	2,395	1.	27	1.	27	1.	27	1.	27	t	+	12.	32
N.M.	92	-	-	-	-	-	-	-	-	-	-	-	-
Ariz.	110	-	-	-	-	-	-	-	-	-	-	-	-
Calif.	255	-	-	-	-	-	-	-	-	-	-	-	-
Other	17												
U. S.	9,731	1.9	169	1.6	137	2.2	195	1.0	89	1.5	132	11.5	99

1934 - SUGAR BEET

Estimated reduction in yield of sugar beet due to diseases, 1934

State	Production	Estimated reduction in yield due to diseases											
		Nematode		Curly-top		Leaf Spot		Phoma Rot		Other Diseases		All Diseases	
	Short Tons	%	1,000 Short Tons	%	1,000 Short Tons	%	1,000 Short Tons	%	1,000 Short Tons	%	1,000 Short Tons	%	1,000 Short Tons
Ohio	329	0	0	0	0	1.	3	1.	3			2.	6
Mich.	1,081	0	0	0	0	t	+	2.	22	t	+	2.1	23
Wis.	162	0	0	0	0	t	+	t	+	-	-	t	+
Minn.		0	0	0	0	1.	+	t	+	t	+	1.	+
Nebr.	550	-	-	-	-	-	-	-	-	-	-	-	-
Mont.	768	-	-	t	+	t	+	1.	8	1.	8	2.	16
Idaho	298	-	-	-	-	-	-	-	-	-	-	-	-
Wyo.	434	t	+	-	-	-	-	-	-	t	+	-	-
Colo.	1,569	-	-	-	-	-	-	-	-	-	-	-	-
Utah	261	-	-	-	-	-	-	-	-	-	-	-	-
Wash.		-	-	15.	+	0	0	-	-	-	-	15.	+
Oreg.		-	-	75.	+	-	-	-	-	-	-	75.	+
Calif.	1,596	-	-	-	-	-	-	-	-	-	-	-	-
Other tates	579												
U. S.	7,627												

Not enough information to calculate losses for the country.

1934 - APPLE
Estimated reduction in yield of apples due to diseases

State	Production: 1,000 Bushels	Estimated reduction in yield due to diseases					
		Bitter Rot		Black Rot		Blotch	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	556	-	-	-	-	-	-
N. H.	312	-	-	-	-	-	-
Vt.	255	-	-	-	-	-	-
Mass.	1,435	1.	16	3.	49	0	0
R.I.	97	-	-	-	-	-	-
Conn.	356	-	-	-	-	-	-
N. Y.	11,844	-	-	-	-	-	-
N. J.	2,070	-	-	-	-	-	-
Pa.	8,554	0.1	11	2.	213	0.2	21
Ohio	4,032	2.	84	0.2	8	0.1	4
Ind.	1,020	0.1	1	t	+	0.1	1
Ill.	2,162	0	0	0.5	11	0.5	11
Mich.	6,464	0	0	t	+	0	0
Wis.	1,204	0	0	t	+	t	+
Minn.	339	0	0	0	0	0	0
Iowa	962	-	-	-	-	t	+
Mo.	1,534	-	-	-	-	-	-
N. D.		0	0	0	0	0	0
S. D.	34	-	-	-	-	-	-
Nebr.	209	-	-	-	-	-	-
Kans.	783	-	-	t	+	t	+
Del.	688	t	+	0.5	4	t	+
Md.	1,102	2.	26	t	+	0.5	6
Va.	9,275	1.	112	t	+	t	+
W. Va.	3,630	t	+	t	+	t	+
N. C.	3,525	2.	92	t	+	2.	92
S. C.	244	3.	8	0.5	1	-	-
Ga.	874	5.	57	3.	34	-	-
Ky.	934	-	-	-	-	-	-
Tenn.	1,748	-	-	2.5	52	t	+
Ala.	588	-	-	-	-	-	-
Miss.	133	-	-	-	-	-	-
Ark.	1,715	0	0	-	-	0	0
La.	12	-	-	-	-	-	-
Okla.	348	-	-	-	-	-	-
Tex.	134	t	+	t	+	t	+
Mont.	358	0	0	0	0	0	0
Idaho	3,312	0	0	0	0	0	0
Wyo.	28	0	0	0	0	0	0
Colo.	1,354	0	0	0	0	0	0
N. M.	1,240	0	0	0	0	0	0
Ariz.	63	0	0	0	0	0	0
Utah	554	0	0	0	0	0	0
Nev.	36	0	0	0	0	0	0
Wash.	32,300	0	0	-	-	0	0
Oreg.	4,938	0	0	-	-	0	0
Calif.	6,500	0	0	-	-	0	0
U. S.	119,855	0.4	407	0.4	372	0.1	135

1934 - APPLE (Continued)

State	Cedar Rust		Blight		Scab		All Diseases	
	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	-	-	-	-	-	-	-	-
N. H.	-	-	-	-	-	-	-	-
Vt.	-	-	-	-	-	-	-	-
Mass.	3.	49	2.	33	3.	49	12.5	204
R. I.	-	-	-	-	-	-	-	-
Conn.	-	-	-	-	-	-	-	-
N. Y.	-	-	-	-	-	-	-	-
N. J.	-	-	-	-	-	-	-	-
Pa.	0.5	53	1.	107	15.	1,600	19.8	2,112
Ohio	0.1	4	0.5	21	1.	42	4.1	171
Ind.	-	-	2.	21	0	0	2.2	23
Ill.	t	+	0.5	11	1.	22	2.5	55
Mich.	0	0	t	+	1.	66	2.	132
Wis.	t	+	2.	25	1.	12	3.	37
Minn.	t	+	t	+	t	+	t	+
Iowa	-	-	-	-	0	0	t	+
Mo.	-	-	-	-	-	-	-	-
N. D.	t	+	1.5	+	t	+	1.5	+
S. D.	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-
Kans.	-	-	t	+	t	+	t	+
Del.	t	+	t	+	4.	29	5.5	40
Md.	0.5	6	3.	38	5.	64	14.	178
Va.	2.	224	1.	112	8.	894	17.	1,901
W. Va.	1.	38	t	+	2.	76	5.	190
N. C.	1.	46	10.	458	3.	137	23.	1,054
S. C.	-	-	2.	5	t	+	7.	18
Ga.	-	-	10.	114	5.	57	23.	262
Ky.	-	-	-	-	-	-	-	-
Tenn.	-	-	5.	105	5.	105	16.5	346
Ala.	-	-	-	-	-	-	-	-
Miss.	-	-	-	-	-	-	-	-
Ark.	-	-	-	-	t	+	t	+
La.	-	-	-	-	-	-	-	-
Okla.	-	-	-	-	-	-	-	-
Tex.	t	+	2.	3	0	0	7.	10
Mont.	0	0	1.	4	1.	4	2.	8
Idaho	0	0	-	-	-	-	-	-
Wyo.	0	0	-	-	-	-	-	-
Colo.	0	0	t	+	0	0	t	+
N. M.	0	0	-	-	0	0	-	-
Ariz.	0	0	-	-	0	0	-	-
Utah	0	0	-	-	0	0	-	-
Nev.	0	0	-	-	0	0	-	-
Wash.	0	0	t	+	1.	333	3.	999
Oreg.	0	0	t	+	2.	106	7.	372
Calif.	0	0	-	-	-	-	-	-
U. S.	0.4	420	1.1	1,057	3.7	3,596	8.3	8,112

1934 - PEAR

Estimated reduction in yield of pear due to diseases

State	Production 1,000 Bushels	Estimated reduction in yield due to diseases							
		Blight		Scab		Leaf Blight		All Diseases	
		%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine	2	t	+	-	-	-	-	t	+
N. H.	5	-	-	-	-	-	-	-	-
Vt.	3	-	-	-	-	-	-	-	-
Mass.	35	7.	3	1.	+	-	-	8.	3
R. I.	6	-	-	-	-	-	-	-	-
Conn.	14	-	-	-	-	-	-	-	-
N. Y.	1,011	-	-	-	-	-	-	-	-
N. J.	74	-	-	-	-	-	-	-	-
Pa.	385	12.	56	1.	5	3.	14	17.	80
Ohio	394	0.5	2	0.1	+	-	-	0.6	2
Ind.	178	-	-	-	-	-	-	-	-
Ill.	641	5.	34	t	+	t	+	5.	34
Mich.	745	1.	8	t	+	0	0	1.	8
Wis.		1.	+	2.	+	0	0	3.	+
Iowa	74	-	-	-	-	-	-	-	-
Mo.	298	-	-	-	-	-	-	-	-
Nebr.	20	-	-	-	-	-	-	-	-
Kans.	145	t	+	-	-	-	-	t	+
Del.	17	t	+	-	-	5.	1	5.	1
Md.	94	1.	1	0.5	+	4.	4	5.5	5
Va.	194	5.	10	t	+	t	+	6.	12
W. Va.	25	8.	2	2.	1	-	-	10.	3
N. C.	218	15.	40	-	-	1.	3	19.	51
S. C.	84	-	-	-	-	-	-	-	-
Ga.	185	-	-	-	-	-	-	-	-
Fla.	67	-	-	-	-	-	-	-	-
Ky.	184	-	-	-	-	-	-	-	-
Tenn.	285	20.	71	-	-	-	-	20.	71
Ala.	326	-	-	-	-	-	-	-	-
Miss.	323	-	-	-	-	-	-	-	-
Ark.	158	-	-	-	-	-	-	-	-
La.	69	5.	4	-	-	t	+	10.	8
Okla.	171	-	-	-	-	-	-	-	-
Texas	303	4.	13	0	0	0	0	9.	30
Idaho	52	-	-	-	-	-	-	-	-
Colo.	307	t	+	0	0	0	0	t	+
N. M.	49	-	-	0	0	-	-	-	-
Ariz.	11	-	-	0	0	-	-	-	-
Utah	53	-	-	0	0	-	-	-	-
Nev.	6	-	-	0	0	-	-	-	-
Wash.	4,042	t	+	1.	41	-	-	1.	41
Oreg.	2,470	3.	81	2.	54	0	0	8.	216
Calif.	9,751	-	-	-	-	-	-	-	-
U. S.	23,474	3.0	325	0.9	101	0.2	22	5.2	565

1934 - PEACH

Estimated reduction in yield of peach due to diseases

State	Production	[illegible] in yield due to diseases									
		Leaf Curl		Brown Rot		Virus Diseases		Scab		All Diseases	
	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels	%	1,000 Bushels
Maine		t	+	t	+	-	-	-	-	t	+
Mass.	2	2.	+	t	+	t	+	t	+	2.	+
R. I.	2	-	-	-	-	-	-	-	-	-	-
Conn.	2	-	-	-	-	-	-	-	-	-	-
N. Y.	41	-	-	-	-	-	-	-	-	-	-
N. J.	22	-	-	-	-	-	-	-	-	-	-
Pa.	442	8.	48	15.	90	1.	6	1.	6	26.	156
Ohio	228	t	+	1.	2	-	-	1.	2	2.1	4
Ind.	192	t	+	-	-	-	-	t	+	-	-
Ill.	528	0.5	3	1.	5	t	+	t	+	1.5	8
Mich.	423	0	0	t	+	0.5	2	t	+	0.5	2
Iowa	53	-	-	-	-	-	-	-	-	-	-
Mo.	468	-	-	-	-	-	-	-	-	-	-
Nebr.	5	-	-	-	-	-	-	-	-	-	-
Kans.	90	-	-	-	-	-	-	-	-	-	-
Del.	64	t	+	5.	3	t	+	1.	1	6.	4
Md.	82	t	+	0.5	+	t	+	0.5	+	1.	1
Va.	414	t	+	t	+	t	+	-	-	2.	8
W. Va.	110	t	+	1.	1	-	-	t	+	2.	2
N. C.	2,312	0.5	14	5.	137	-	-	3.	82	15.5	425
S. C.	1,610	t	+	1.5	26	-	-	5.	86	6.5	112
Ga.	5,610	1.	61	2.	122	-	-	5.	305	8.	488
Fla.	68	-	-	-	-	-	-	-	-	-	-
Ky.	434	-	-	-	-	-	-	-	-	-	-
Tenn.	2,325	-	-	10.	258	-	-	0	0	10.	258
Ala.	1,089	-	-	-	-	-	-	-	-	-	-
Miss.	781	-	-	-	-	-	-	-	-	-	-
Ark.	1,348	2.	38	0.5	9	-	-	0	0	2.5	47
La.	198	-	-	-	-	-	-	-	-	-	-
Okla.	612	-	-	-	-	-	-	-	-	-	-
Tex.	1,287	t	+	0.5	7	t	+	3.	42	8.5	119
Idaho	93	-	-	0	0	-	-	0	0	-	-
Colo.	1,260	0	0	t	+	t	+	0	0	t	+
N. M.	123	-	-	0	0	-	-	0	0	-	-
Ariz.	48	-	-	0	0	-	-	0	0	-	-
Utah	558	-	-	0	0	-	-	0	0	-	-
Nev.	6	-	-	0	0	-	-	0	0	-	-
Wash.	1,200	1.	12	1.	12	-	-	0	0	2.	24
Oreg.	314	3.	10	2.	7	-	-	0	0	7.	24
Calif.	20,460	-	-	-	-	-	-	-	-	-	-
U. S.	45,404	0.9	186	3.1	679	t	8	2.4	524	7.7	1,682

1934 - CHERRY

Estimated reduction in yield of cherry due to diseases

State	Production Tons	Estimated reduction in yield due to diseases							
		Brown Rot		Leaf Spot		Other Diseases		All Diseases	
		%	Tons	%	Tons	%	Tons	%	Tons
Mass.		20.	+	t	+	-	-	20.	+
N. Y.	19,220	-	-	-	-	-	-	-	-
Pa.	6,344	10.	813	10.	813	2.	163	22.	1,789
Ohio	3,660	t	+	t	+	-	-	t	+
Ind.		t	+	t	+	-	-	t	+
Ill.		2.	+	t	+	-	-	2.	+
Mich.	26,560	t	+	1.	268	t	+	1.	268
Wis.	4,400	t	+	3.	136	-	-	3.	136
Kans.		t	+	-	-	-	-	t	+
Del.		5.	+	10.	+	-	-	15.	+
Md.		2.	+	1.	+	-	-	3.	+
Va.		1.	+	2.	+	-	-	3.	+
W. Va.		2.	+	t	+	t	+	3.	+
N. C.		20.	+	t	+	2.	+	22.	+
Mont.	750	0	0	t	+	-	-	t	+
Idaho	2,982	0	0	-	-	-	-	-	-
Colo.	5,920	t	+	-	-	-	-	-	-
Utah	3,850	-	-	-	-	-	-	-	-
Wash.	13,500	5.	711	t	+	-	-	5.	711
Oreg.	9,620	7.	811	5.	580	5.	580	17.	1,971
Calif.	16,000	-	-	-	-	-	-	-	-
Twelve States	112,806	3.3	2,335	2.6	1,797	1.1	743	7.0	4,875

1934 - GRAPE

Estimated reduction in yield of grape due to diseases east of Rocky Mountains

State	Production Tons	Estimated reduction in yield due to diseases					
		Black Rot		Other Diseases		All Diseases	
		%	Tons	%	Tons	%	Tons
Maine	7	-	-	-	-	-	-
N. H.	29	-	-	-	-	-	-
Vt.	11	-	-	-	-	-	-
Mass.	307	8.	27	t	+	8.	27
R. I.	171	-	-	-	-	-	-
Conn.	1,023	-	-	-	-	-	-
N. Y.	49,400	-	-	-	-	-	-
N. J.	2,464	-	-	-	-	-	-
Pa.	18,981	12.	2,649	2.	441	14.	3,090
Ohio	22,720	2.	464	t	+	2.	464
Ind.	2,812	-	-	-	-	-	-
Ill.	5,658	1.	57	-	-	1.	57
Mich.	61,145	t	+	1.	618	1.	618
Wis.	274	1.	3	-	-	1.	3
Minn.	194	-	-	t	+	t	+
Iowa	5,060	-	-	-	-	-	-
Mo.	7,540	-	-	-	-	-	-
Nebr.	1,216	-	-	-	-	-	-
Kans.	2,574	t	+	-	-	t	+
Del.	2,430	20.	608	-	-	20.	608
Md.	614	15.	108	t	+	15.	108
Va.	1,692	15.	317	5.	106	20.	423
W. Va.	944	5.	52	5.	52	10.	104
N. C.	4,640	10.	546	5.	273	15.	819
S. C.	829	25.	276	-	-	25.	276
Ga.	738	15.	148	10.	98	25.	246
Fla.	1,026	10.	128	10.	128	20.	256
Ky.	1,113	-	-	-	-	-	-
Tenn.	1,110	50.	1,110	-	-	50.	1,110
Ala.	641	-	-			-	-
Miss.	228	-	-			-	-
Ark.	16,640	t	+	-	-	t	+
La.	44	-	-	-	-	-	-
Okla.	2,112	-	-	-	-	-	-
Texas	1,595	5.	92	8.	147	13.	239
	217,982	4.3	6,585	1.2	1,863	5.5	8,448

1934 - STRAWBERRY

Estimated reduction in yield of strawberry due to diseases, 1934

State	Production: 1,000 *Crates	Estimated reduction in yield due to diseases													
		Leaf Spot		Leaf Scorch		Dwarf		Black Root and Root Rots		Other Diseases		All Diseases		Fruit Rots	
		%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates
Maine		1.	+	-	-	0	0	-	-	-	-	1.	+	-	-
Mass.		2.	+	-	-	t	+	9.	+	12.	+	23.	+	4.	+
N. Y.	505	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. J.	540	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pa.	260	2.	6	-	-	0	0	8.	23	1.	3	11.	32	-	-
Ohio	189	0.1	+	0	0	0	0	-	-	-	-	0.1	+	-	-
Ind.	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ill.	320	t	+	-	-	-	-	5.	17	-	-	5.	17	-	-
Mich.	285	t	+	t	+	0	0	1.	3	t	+	1.	3	-	-
Wis.	173	t	+	t	+	0	0	25.	58	-	-	25.	58	-	-
Minn.		2.	+	0	0	0	0	1.	+	2.	+	5.	+	-	-
Iowa	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mo.	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. D.		t	+	-	-	0	0	-	-	1.	+	1.	+	-	-
Kans.	16	-	-	-	-	0	0	-	-	-	-	-	-	-	-
Del.	352	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Md.	652	1.	8	1.	8	-	-	15.	118	-	-	17.	134	-	-
Va.	732	5.	44	2.	18	-	-	10.	88	-	-	17.	150	-	-
N. C.	476	t	+	1.	6	2.	11	10.	57	3.	17	16.	91	8.	38
S. C.	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ga.	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fla.	675	0	0	t	+	1.	8	1.5	12	12.5	99	15.	119	-	-

1934 - STRAWBERRY (Continued)

State	Production: 1,000 *Crates	Estimated reduction in yield due to diseases													
		Leaf Spot		Leaf Scorch		Dwarf		Black Root and Root Rots		Other Diseases		All Diseases		Fruit Rots	
		%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates	%	1,000 Crates
Ky.	533	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tenn.	1,048	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ala.	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miss.	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ark.	1,518	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La.	1,242	10.	148	5.	74	0.5	7	0.5	7	-	-	16.	236	15.	186
Okla.	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texas	184	1.	2	0.5	1	0	0	3.	6	5.	10	9.5	19	-	-
Mont.		t	+	0	0	0	0	5.	+	6.	+	11.	+	-	-
Colo.		-	-	-	-	0	0	t	+	-	-	t	+	-	-
Utah	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash.	638	-	-	0	0	0	0	7.5	55	5.	36	12.5	91	-	-
Oreg.	595	2.	15	0	0	0	0	5.	38	15.	114	22.	167	-	-
Calif.	989	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U. S.	13,264	3.0	223	1.4	107	0.3	26	6.4	482	3.7	279	14.8	1,117	-	224

*24-quart crates, 36 pounds.

AGRICULTURAL REFERENCE DEPARTMENT

THE PLANT DISEASE REPORTER

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Division of Mycology and Disease Survey

Supplement 90

Diseases of Plants in the United States in 1934

December 31, 1935

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

DISEASES OF PLANTS IN THE UNITED STATES IN 1934

Compiled by

H. A. Edson, Paul R. Miller, and Jessie I. Wood

Plant Disease Reporter
Supplement 90

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INTRODUCTION

Someone has said that the usual weather is the unusual. If that be true, the weather of 1934 was more unusual than usual. Extremes of temperature characterized the winter which preceded the growing season. Average means from 4° Fahrenheit to 10° Fahrenheit above normal prevailed in the northwest, while the northeastern portions of the country experienced an exceedingly cold winter with much attendant injury to trees, shrubs, and nursery stock. The month of February in particular was characterized by extremes of temperature, cold in the east, warm in the west. The normal mean isotherm for that month passed through western Wisconsin, eastern Iowa, central Missouri, northeastern Arkansas, southwestern Oklahoma, and east central Texas. East of that line diminishing means toward the northeast fell to a minimum of 16° Fahrenheit below normal in southern Maine, while western means rose successively to a maximum of 16° Fahrenheit above normal centering in northeastern Montana and northwestern North Dakota. The summer was hot and dry throughout most of the United States. The severest and most extensive drought on record accompanied by prolonged periods of excessively high temperature prevailed except in New England and in the southeastern States. Such conditions obviously afford an excellent opportunity for study of the ecology of plant diseases and it is the hope of the Survey that its records and the information presented in the summary may be of value to that end.

The 1934 summary follows closely in both form and arrangement the plan of other summaries of recent years. It has been made possible through the continued cooperation of both the official and the informal collaborators of the Plant Disease Survey. A list of the officially appointed collaborators for 1934 is given below.

The Survey and the authors of this Summary desire to express sincere appreciation of the support received from both the collaborators listed and the large number of unnamed colleagues and friends who have contributed reports and assistance to the work of the Survey during the year.

H. A. E.

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HAITI, Port Au Prince - H. D. Barker.

HAWAII, Pineapple Experiment Station, Honolulu - M. B. Linford,
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PUERTO RICO, Insular Experiment Station, Rio Piedras - M. T. Cook,
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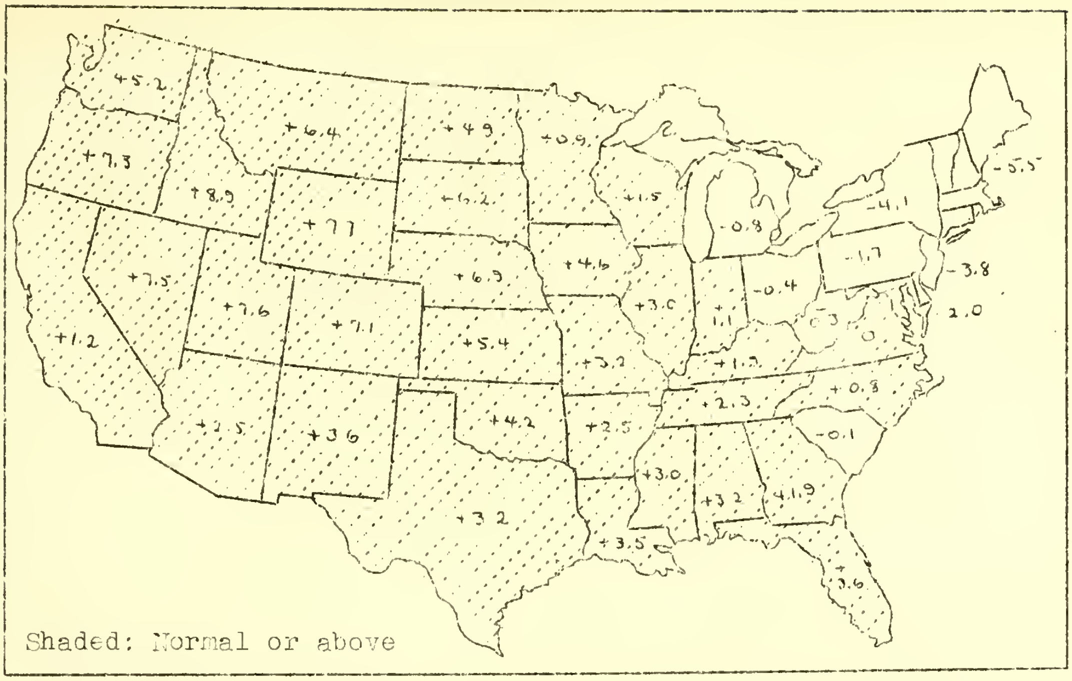
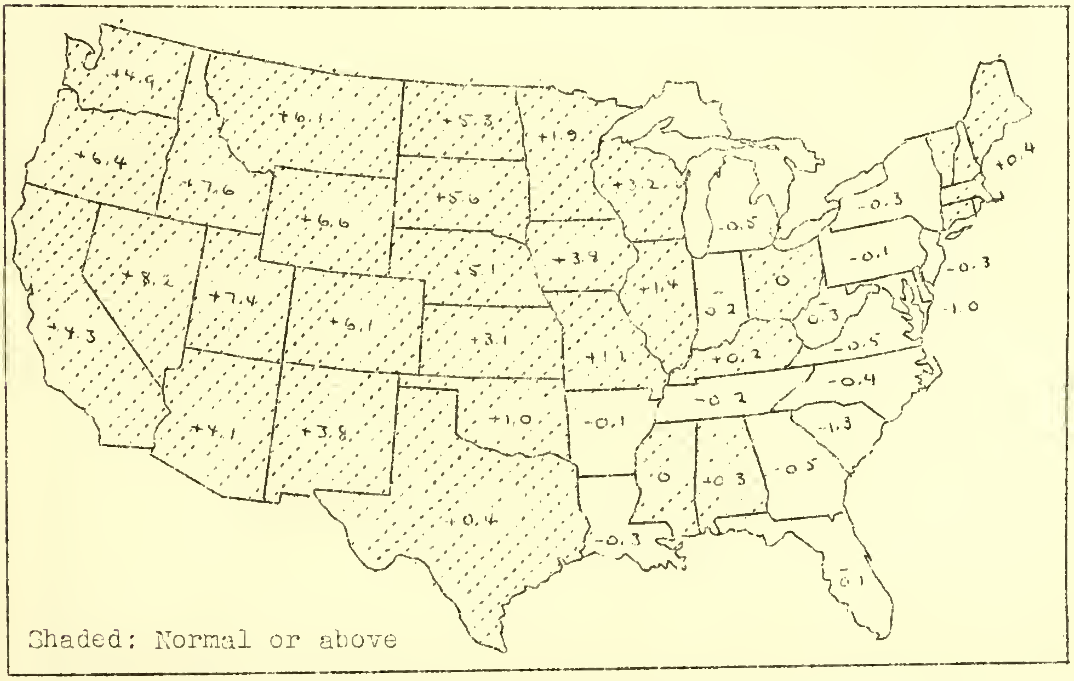


Shaded: Normal or above

Fig. 1. Departure from the normal temperature for the winter, December, 1933 to February, 1934, inclusive.



Shaded: Normal or above

Fig. 2. Departure from the normal temperature for the spring, 1934, March to May, inclusive.

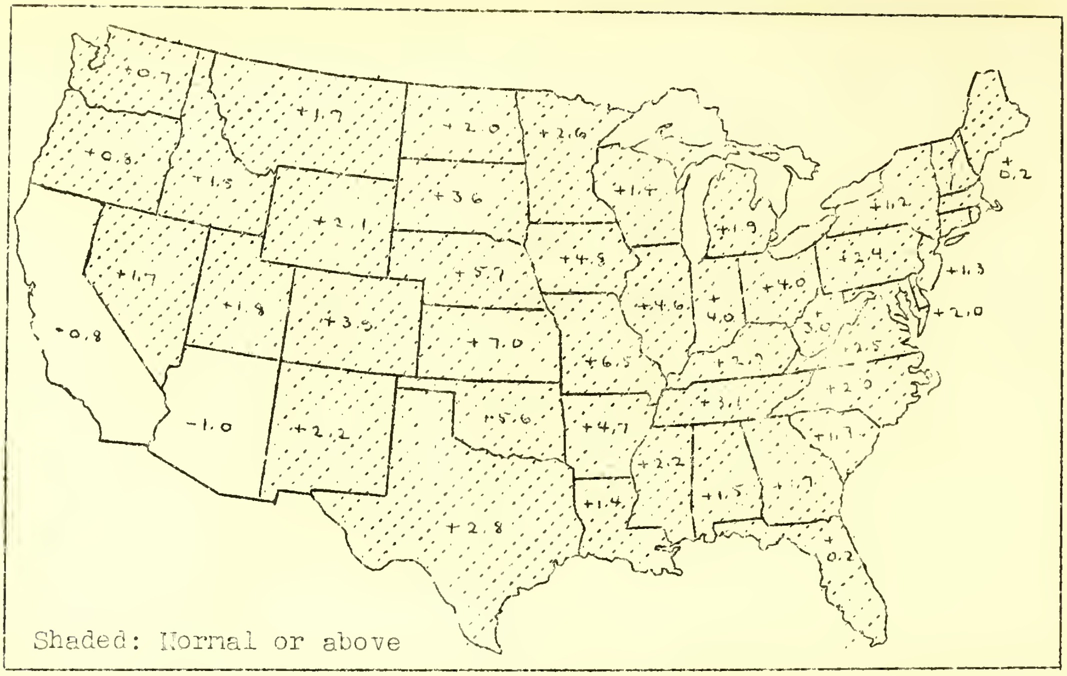


Fig. 3. Departure from the normal temperature for the summer, 1934, June to August, inclusive.

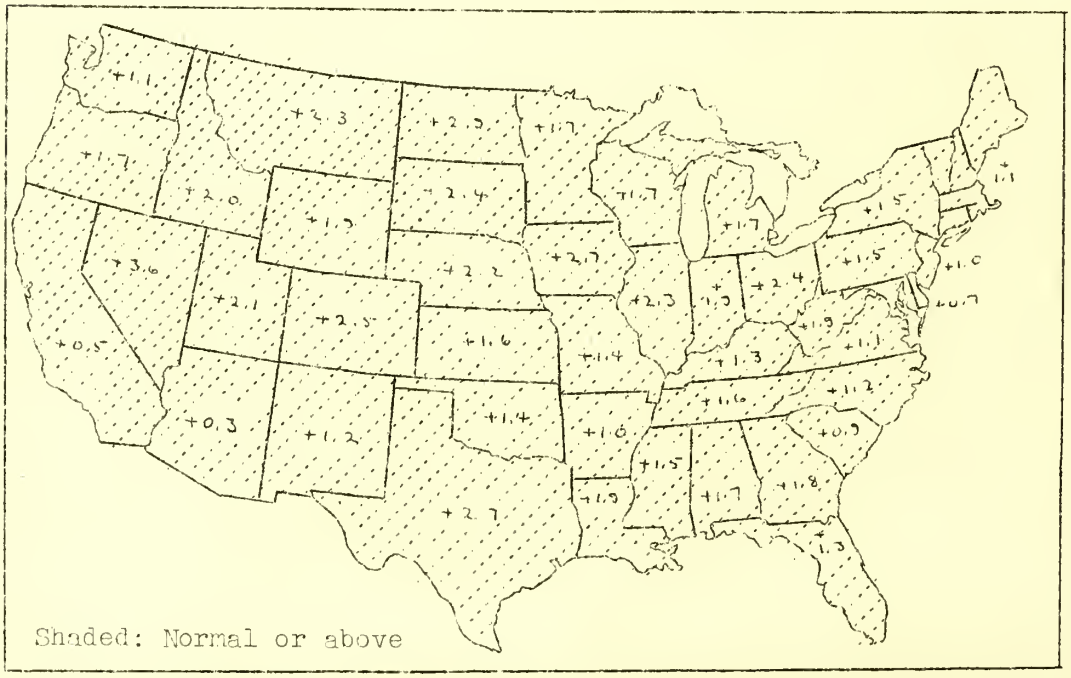
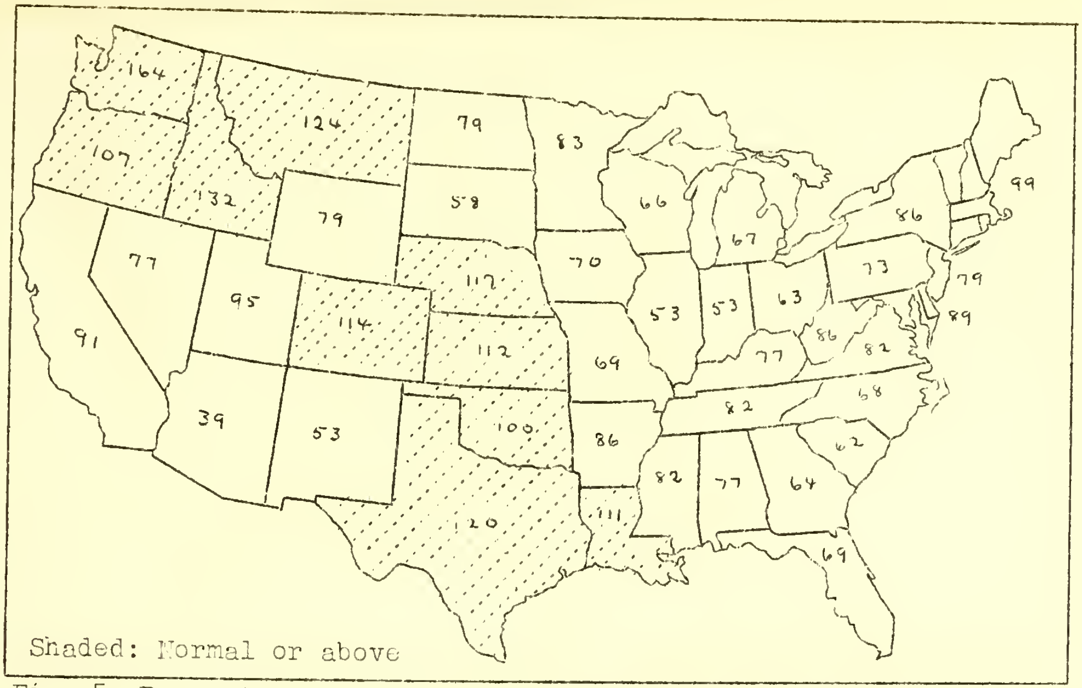
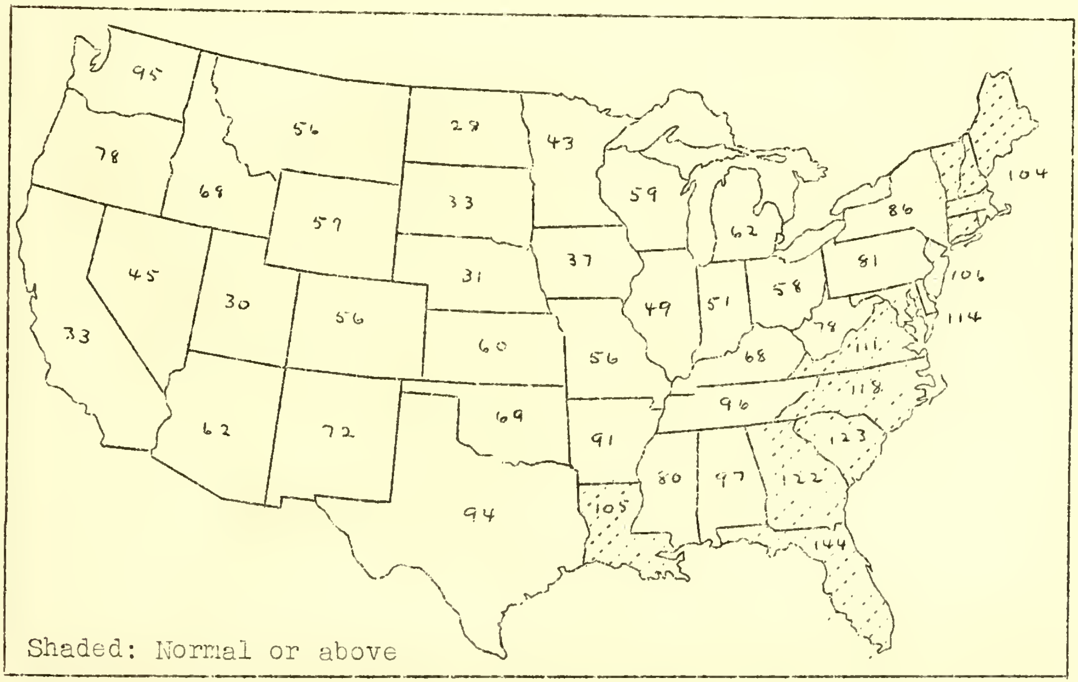


Fig. 4. Departure from the normal temperature for the autumn of 1934, September to November, inclusive.



Shaded: Normal or above

Fig. 5. Percentage of normal precipitation for the winter, December, 1933 to February, 1934, inclusive.



Shaded: Normal or above

Fig. 6. Percentage of normal precipitation for the spring, March to May, 1934, inclusive.

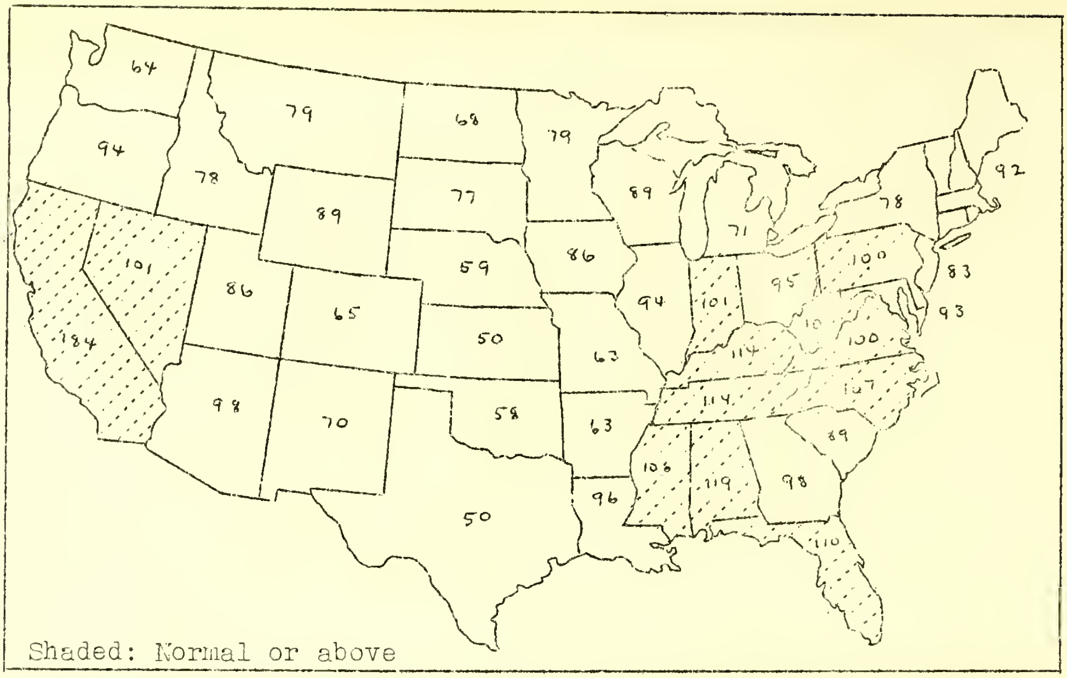


Fig. 7. Percentage of normal precipitation for the summer, June to August, 1934, inclusive.

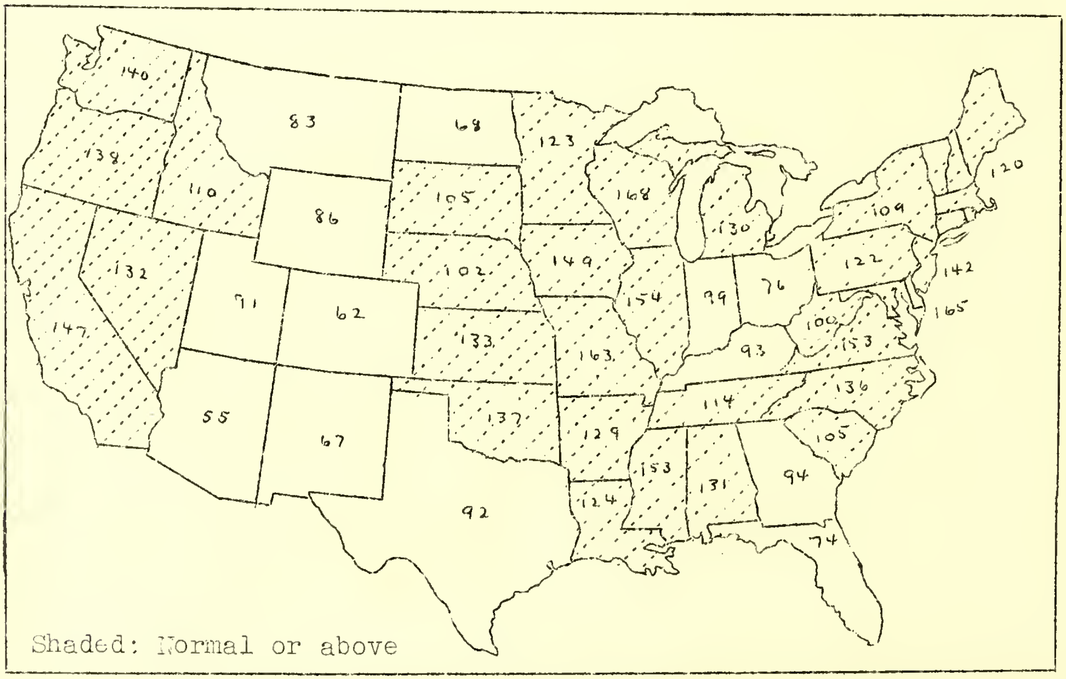


Fig. 8. Percentage of normal precipitation for the autumn, September to November, 1934.

HARRISBURG, PENNSYLVANIA

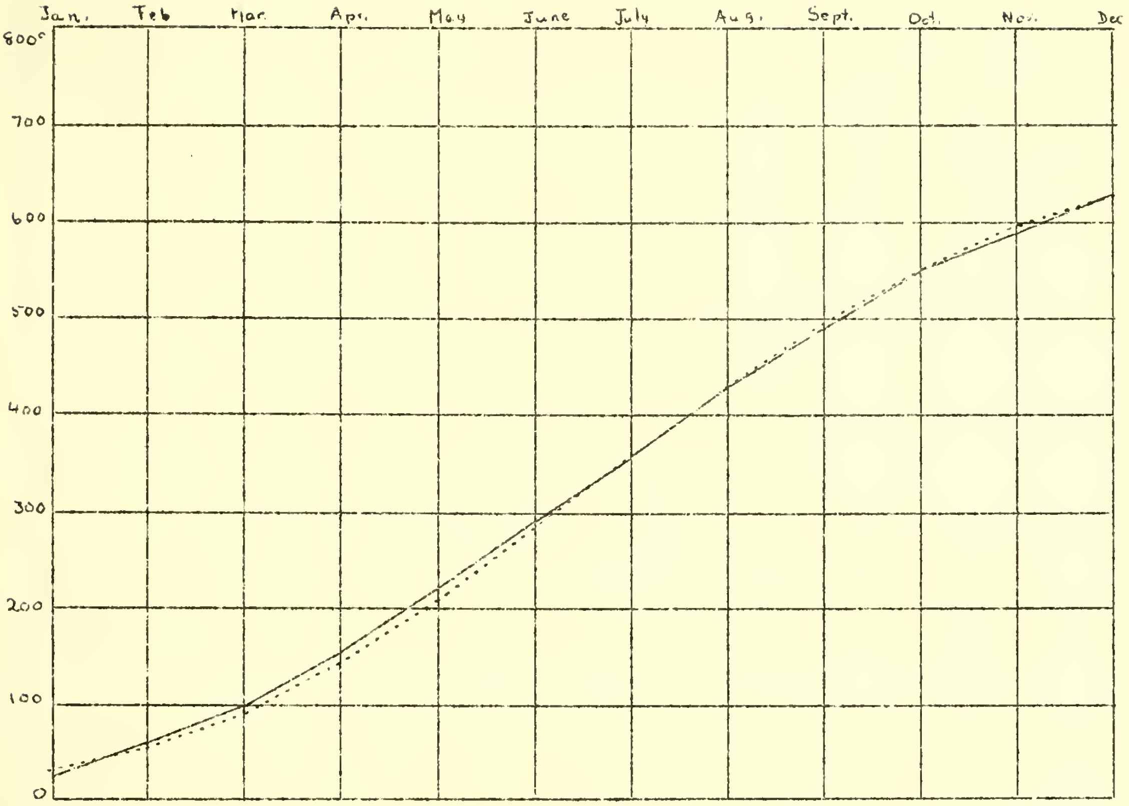


Fig. 9. Accumulated temperature in degrees F. for Harrisburg, Pennsylvania, 1934 (dotted line), compared with normal (solid line).

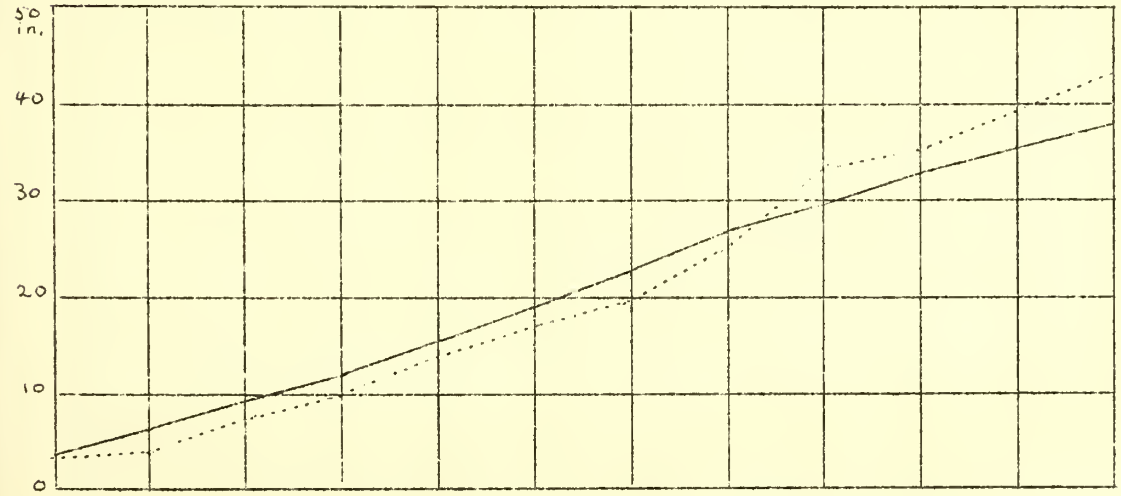


Fig. 10. Accumulated precipitation in inches for Harrisburg, Pennsylvania, 1934 (dotted line), compared with normal (solid line).

ATLANTA, GEORGIA

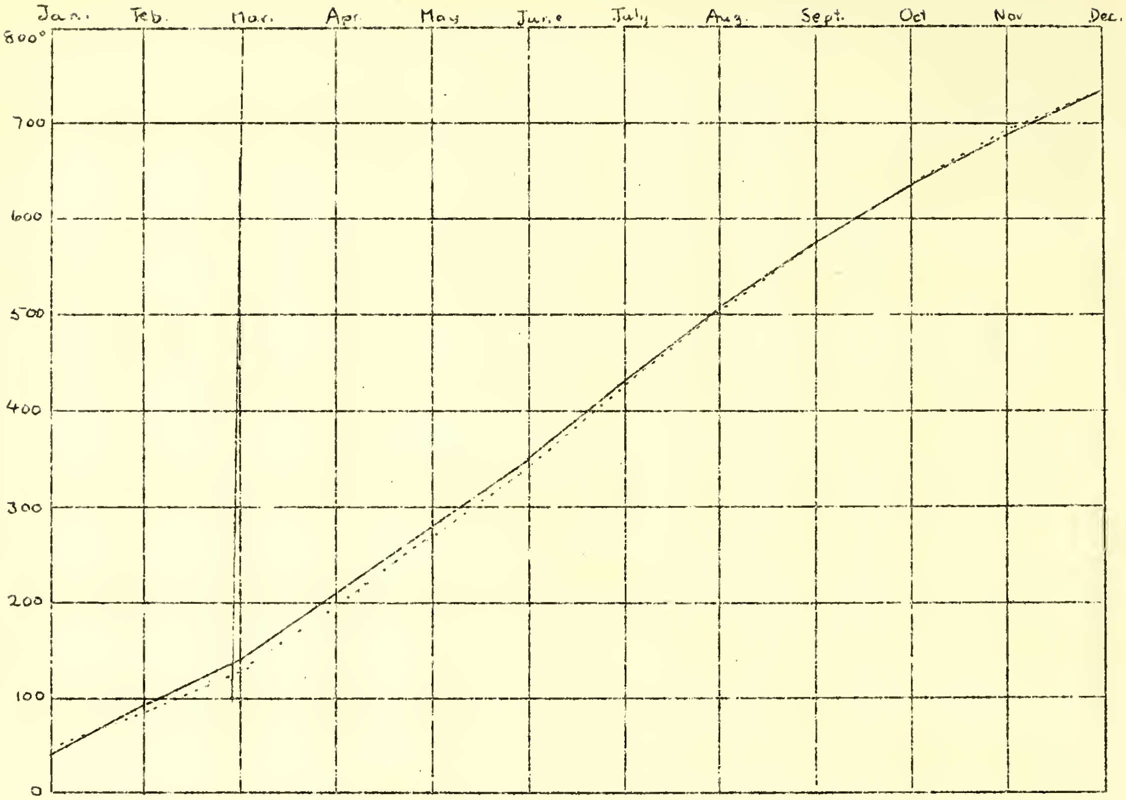


Fig. 11. Accumulated temperature in degrees F. for Atlanta, Georgia, 1934 (dotted line), compared with normal, (solid line).

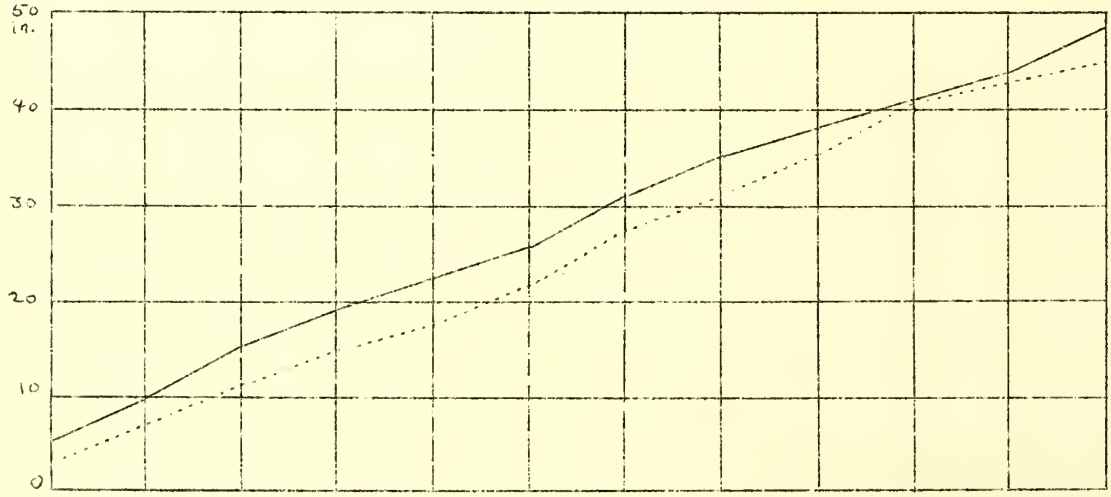


Fig. 12. Accumulated precipitation in inches for Atlanta, Georgia, 1934 (dotted line), compared with normal, (solid line).

BISMARCK, NORTH DAKOTA

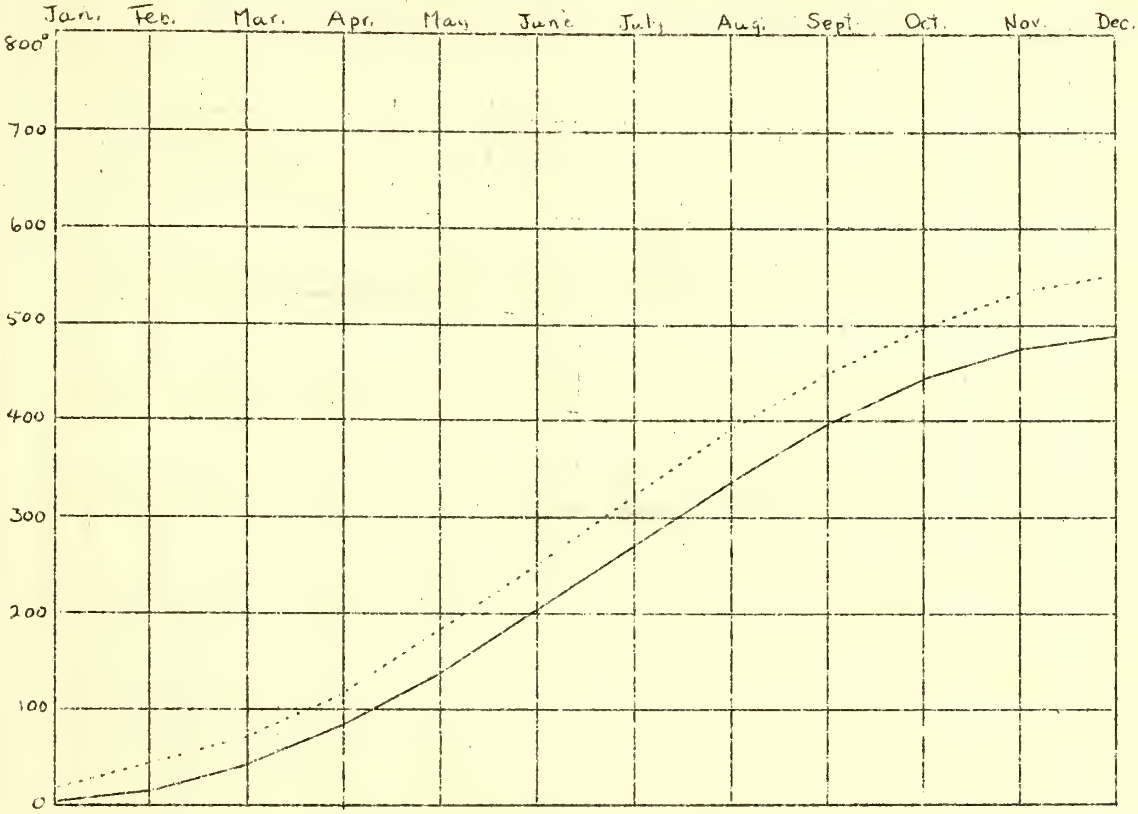


Fig. 13. Accumulated temperature in degrees F. for Bismarck, North Dakota, 1934 (dotted line), compared with normal (solid line).

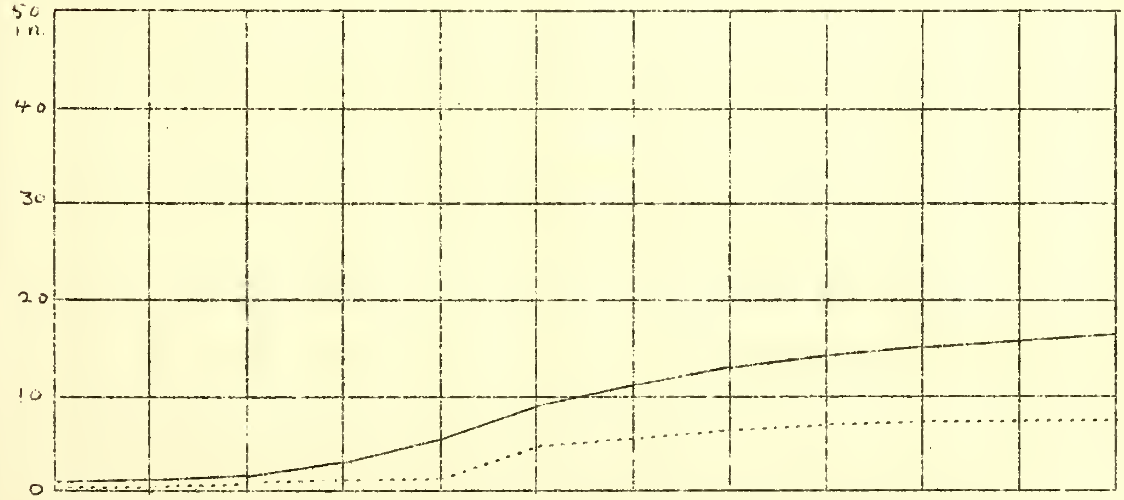


Fig. 14. Accumulated precipitation in inches for Bismarck, North Dakota, 1934 (dotted line), compared with normal (solid line).

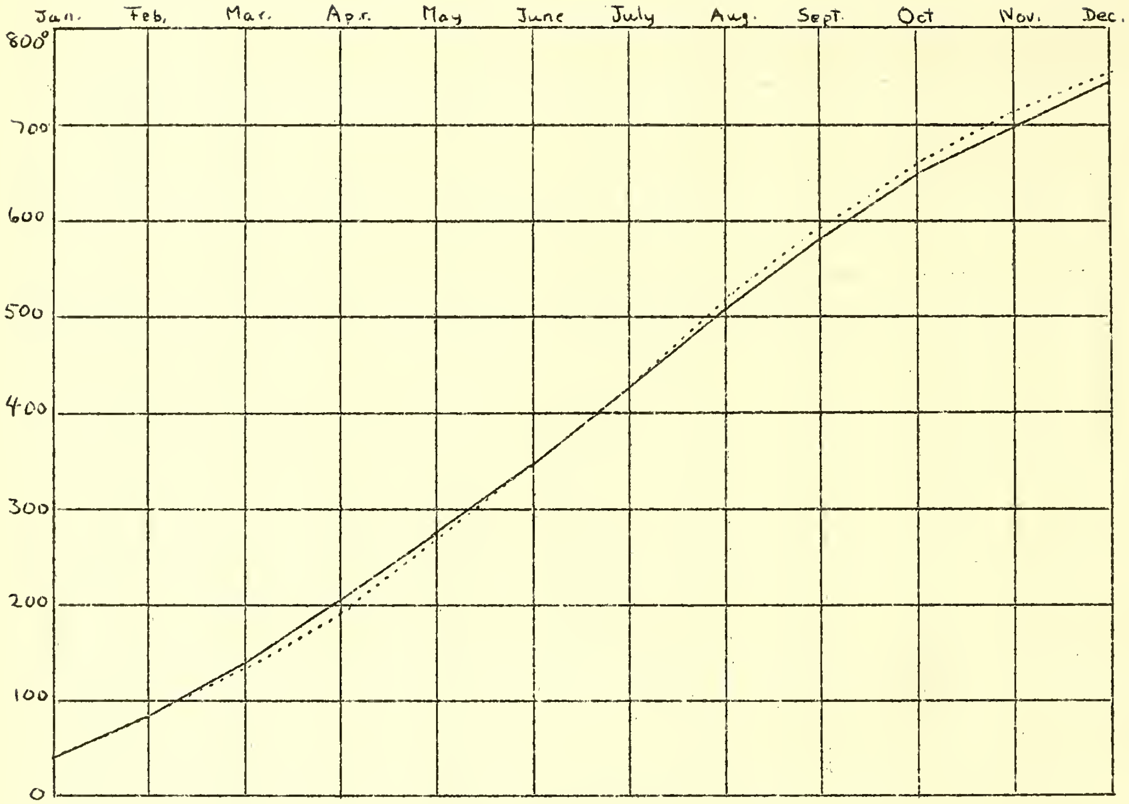


Fig. 15. Accumulated temperature in degrees F. for Little Rock, Arkansas, 1934 (dotted line), compared with normal (solid line).

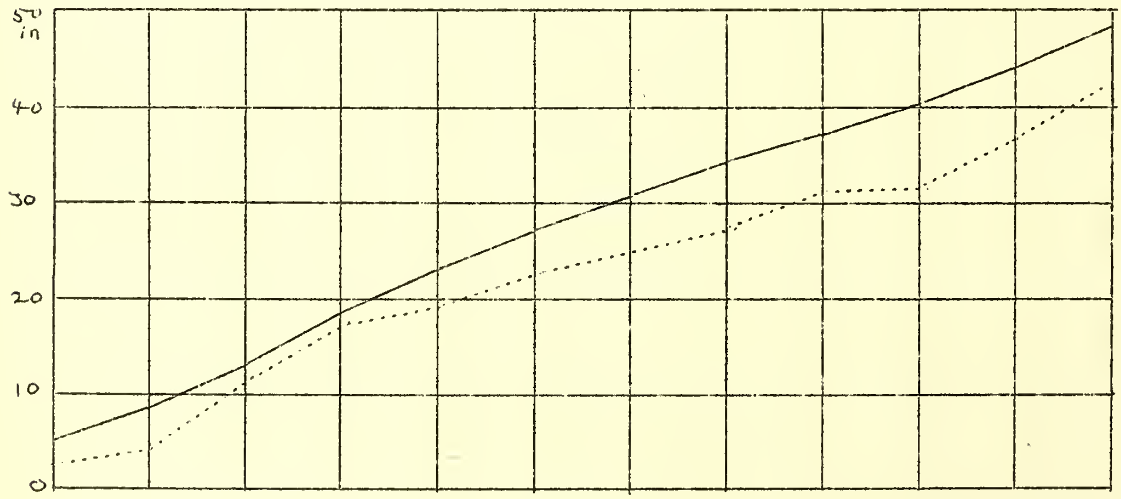


Fig. 16. Accumulated precipitation in inches for Little Rock, Arkansas, 1934 (dotted line), compared with normal (solid line).

PORTLAND, OREGON

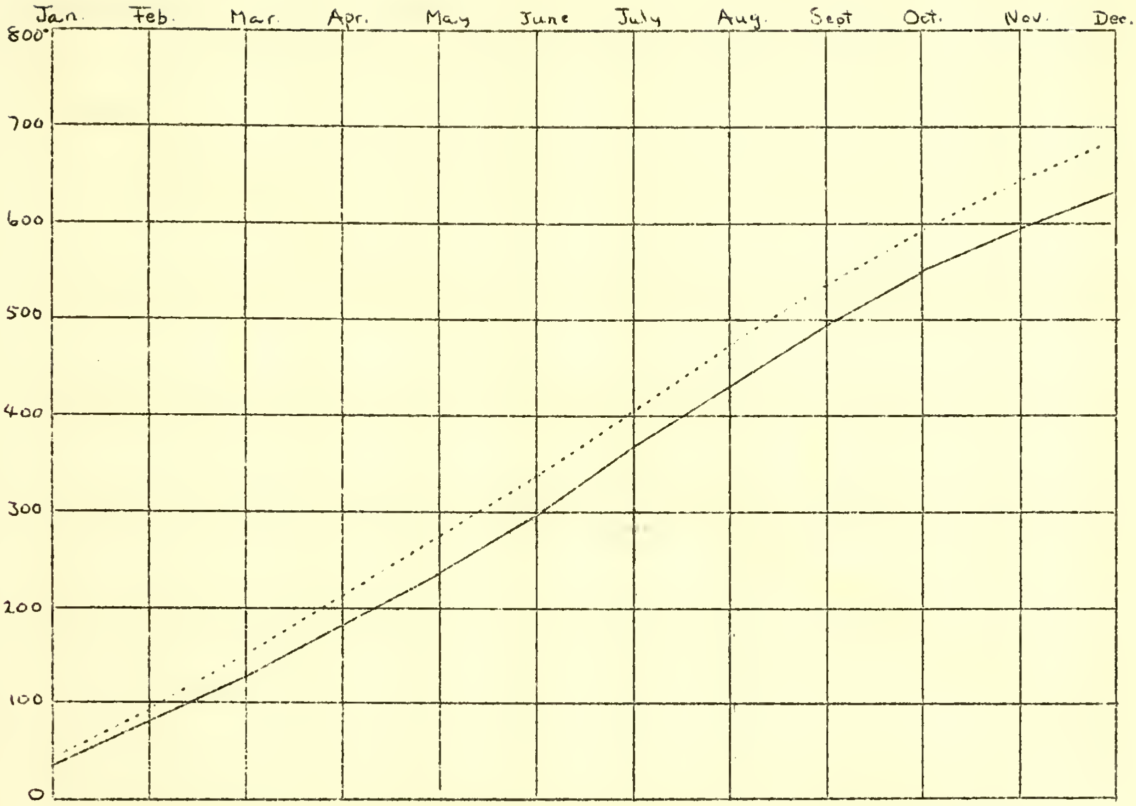


Fig. 17. Accumulated temperature in degrees F. for Portland, Oregon, 1934 (dotted line), compared with normal (solid line).

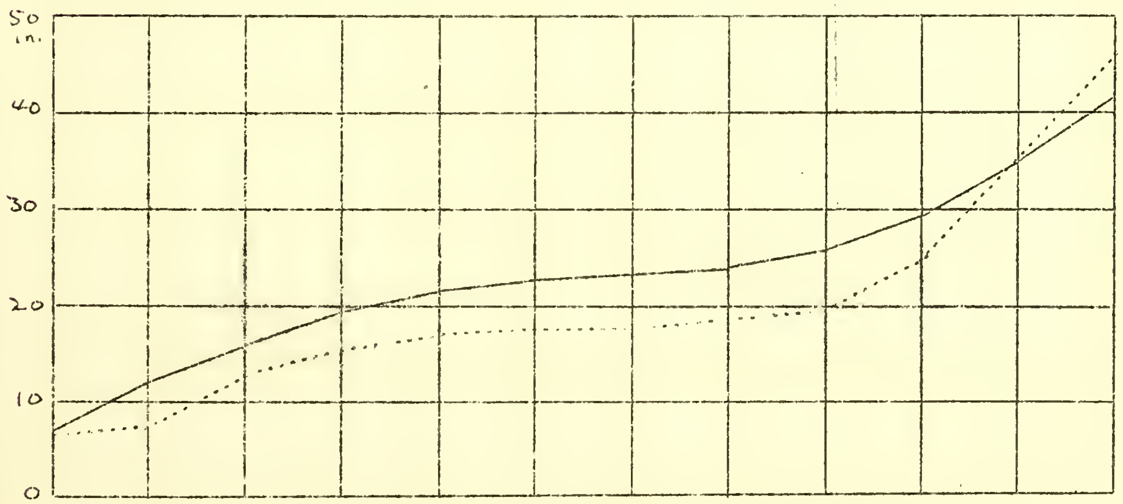


Fig. 18. Accumulated precipitation in inches for Portland, Oregon, 1934 (dotted line), compared with normal (solid line).

SACRAMENTO, CALIFORNIA

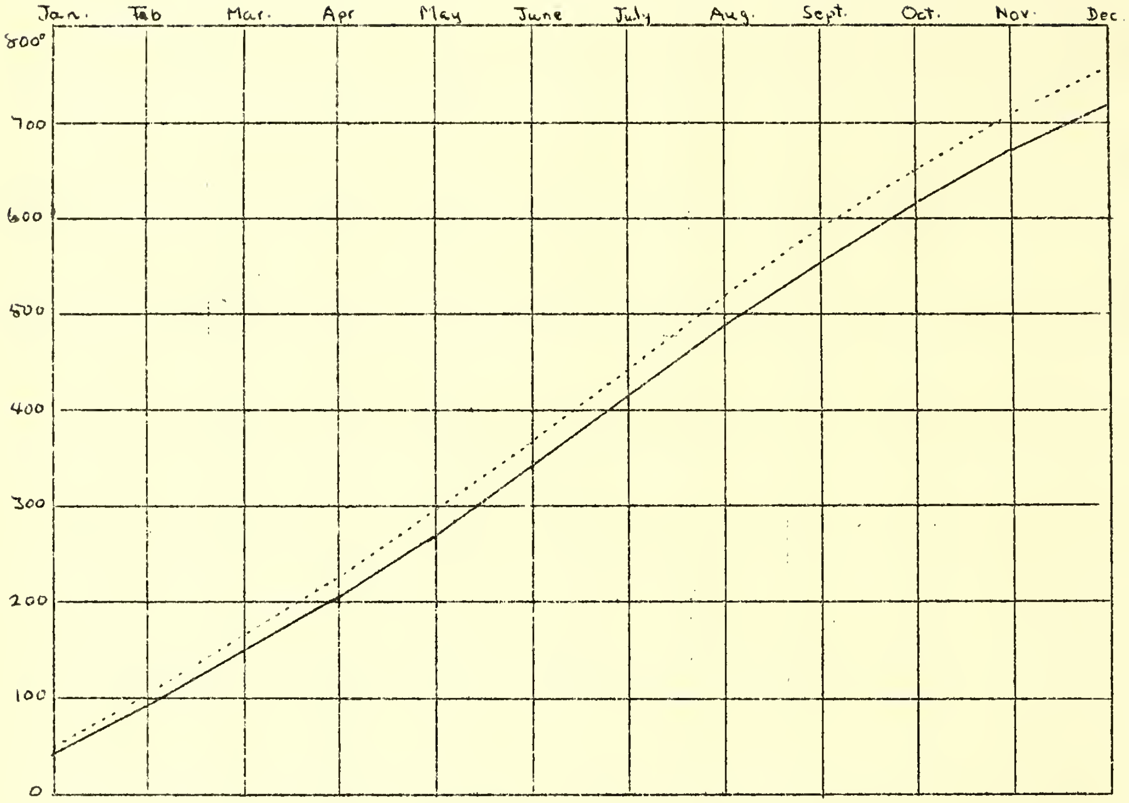


Fig. 19. Accumulated temperature in degrees F. for Sacramento, California, 1934 (dotted line) compared with normal (solid line).

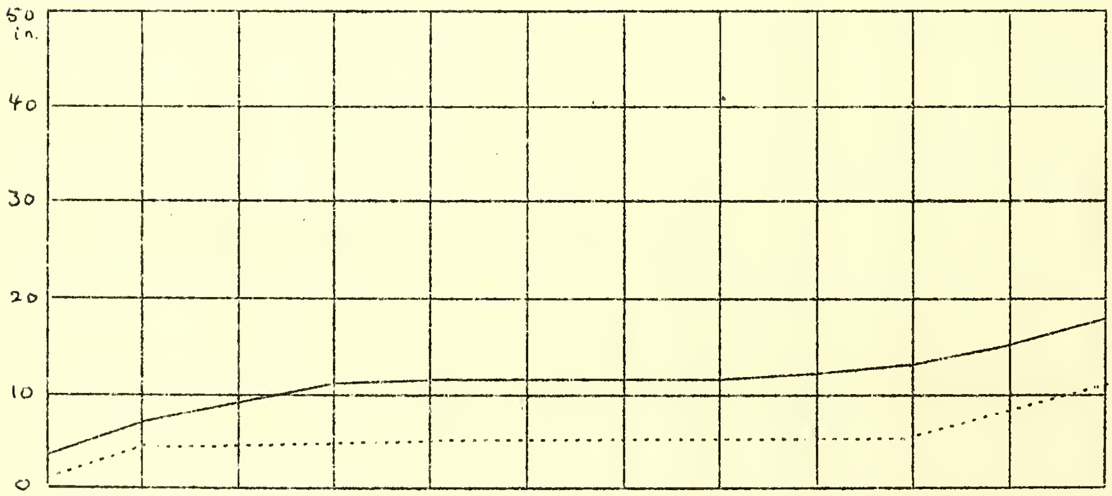


Fig. 20. Accumulated precipitation in inches for Sacramento, California, 1934 (dotted line), compared with normal (solid line).

DISEASES OF CEREAL CROPS

WHEAT

BUNT (Tilletia levis and T. tritici) occasioned losses estimated as follows: Maryland, West Virginia, North Carolina, Montana, each 3 per cent; Michigan, 2.5; Oregon, 2; Washington, 1 to 2; Ohio and North Dakota, each 1.5; Pennsylvania, 1.3; Texas, Indiana, and Kansas, each 1; South Carolina and Minnesota, 0.5; Delaware, Wisconsin, and Colorado, each a trace. In Idaho, 5 to 10 per cent loss occurred locally, but there was much less for the State as a whole. T. levis occurred in about the usual amount in Wyoming. An apparently distinct physiologic form of T. tritici, so-called "low smut," was prevalent in the Cache Valley, Utah.

LOOSE SMUT (Ustilago tritici). Losses from loose smut through the country as a whole appear to have been somewhat less severe than in 1933. Lefebvre stated that smut seems to be on the increase in Kansas, and Young in Montana reported "the first serious damage to winter wheat by loose smut, according to my memory of conditions." Muncie, in Michigan, reported the hot, dry weather at flowering time in 1933 unfavorable to development of the disease this season. Losses of more than a trace were recorded as follows: Georgia, 3 per cent; Pennsylvania, 2.4 per cent, West Virginia, 2; Maryland, Michigan, 1.5; New York, North Carolina, South Carolina, Texas, Ohio, Minnesota, each 1; Montana, 0.7, North Dakota, 0.4; Kansas, 0.25. Infection was heavy in north-central Texas with some fields showing an incidence of 35 per cent. At Athens, Georgia, from 5 to 15 per cent developed in experimental plots planted with untreated seed.

FLAG SMUT (Urocystis tritici) was found in a limited number of fields, with a prevalence of less than 1 per cent in each case, in the former quarantine area in Illinois. A trace, with maximum incidence of 5 per cent, was reported locally in Kansas. In the vicinity of Leavenworth, in fields where the disease was found in 1930, its prevalence appeared unchanged. In variety tests on a farm near Leavenworth, Kanred was resistant, and Harvest Queen selection 2418 highly resistant. Local Harvest Queen was listed among the very susceptible varieties.

STEM RUST (Puccinia graminis tritici). Losses from stem rust were very slight throughout most of the country. It was severe in Wythe, Grayson, and Carroll Counties in Virginia where barberries are generally distributed. In central Texas 100 per cent infection occurred generally although losses for the State were not serious. In Minnesota, considerable rust appeared in some localities on Ceres, usually a very resistant variety. Maine reported the presence of stem rust. Percentage losses reported were 10 in Massachusetts; 5 in Minnesota; 3, South Carolina; 2, North Dakota; 1, Texas; 0.5, Ohio; trace, Pennsylvania, Tennessee, North Carolina, Oklahoma, Michigan, Wisconsin, South Dakota, Nebraska, Kansas, Washington, and Oregon. Illinois, Indiana, Iowa, Montana, Wyoming, Colorado, each reported no loss from stem rust. Maryland and Kentucky reported that the disease was not observed.

LEAF RUST (Puccinia rubigo-vera tritici = P. triticina) appeared early and in severe form in Western Washington where it caused losses of 25 to 35 per cent constituting the most serious outbreak in the history of the region. In Central Texas, infection was extremely heavy especially on the hard red winter wheats. Infection was also extremely heavy on winter wheat in the vicinity of Lawton and Stillwater, Oklahoma, but drought conditions prevented the general epidemic which seemed indicated. F. M. Rolfs, writing in January, stated, "An inspection of the leaf rust situation through sixteen of our northern and western counties during December (1933) shows a general infection throughout the entire area. Infection varied from 5 to 80 per cent. Up to date I have been unable to find a single field free of leaf rust." However, due to drought, only traces of leaf rust could be found in the vicinity of Woodward in May. One hundred per cent infection was noted in experimental plots at Knoxville, Tennessee. Rust appeared late in the season in Georgia and spread rapidly causing considerable damage. Somewhat similar conditions prevailed in South Carolina and to a less extent in North Carolina. Incidence is summarized as follows: Maine and Tennessee, present; South Carolina, 15 per cent loss; Georgia, 12; Massachusetts and Pennsylvania, 10; Oregon, 6.5; West Virginia, North Carolina, Texas, each 5; Illinois, 2; Ohio, 0.5; Maryland, Oklahoma, Michigan, Wisconsin, Minnesota, North Dakota, Kansas, Montana, Colorado, Washington, each a trace.

STRIPE RUST (Puccinia glumarum) was reported present in moderate amounts on winter wheat in Oregon.

SCAB (Gibberella saubinetii) was held in check throughout most of the country by the dry weather. It occurred locally in areas in eastern Maryland and eastern Virginia where there were June rains, causing a 5 per cent reduction in yield and an additional 5 per cent loss in grade. The disease was not observed in Michigan or Kansas. Other States reporting no loss were Minnesota and Iowa. Maine reported its presence; Massachusetts, Tennessee, Texas, Ohio, Wisconsin, North Dakota, each a trace; Pennsylvania, 0.5 per cent with a 10 to 15 bushel reduction in yield in some fields; Delaware and West Virginia, each 1 per cent; North Carolina, 2 per cent.

GLUME BLOTCH (Septoria nodorum) was more severe than usual in Pennsylvania, Virginia, and North Carolina. It was also found doing serious injury to one field of Tennessee Purple Straw in North Georgia but very little was observed in other fields. It was much less prevalent than in 1933 in Maryland.

SPECKLED LEAF BLOTCH (Septoria tritici) was more generally found in Pennsylvania than for several years, with an average incidence in surveyed fields of 9.04 per cent. It was also more prevalent than usual in North Carolina (0.2 per cent); northwestern Oklahoma; and in a few fields in northern Georgia. It was also observed on spelt in Oregon.

BASAL GLUME ROT (Bacterium atrofaciens) was reported only from Kansas where no loss resulted and the disease was much less prevalent than in 1933 or in average years.

BLACK CHAFF (Bacterium translucens undulosum) was reported to be more prevalent than in former years in North Carolina but the loss was only 0.1 per cent. It was not observed in Wisconsin and was much less prevalent in Minnesota than in 1933 or in average years. A trace of injury resulted from scattered infections in North Dakota.

FOOT AND ROOT ROTS (Helminthosporium sativum, Fusarium spp., Cercosporella herpotrichoides, Gibellina cerealis). Losses from foot rots were estimated as follows: Massachusetts, Pennsylvania, Illinois, Michigan, Wisconsin, Colorado, Washington, each a trace; Kansas 0.25 per cent; Louisiana, North Dakota, each 0.5; Minnesota, 1; North Carolina, Oregon, 3 each; Montana 4 to 10; Idaho, 10. In the drought area the estimation of loss was difficult because the proportion of injury attributable to the presence of parasites could not be distinguished readily from that caused primarily by lack of moisture. Helminthosporium sativum was mentioned as present in Pennsylvania, Michigan, Wisconsin, Minnesota, North Dakota, and Montana. In Montana, foot rots, chiefly Helminthosporium, killed most of the wheat prematurely, especially in Gallatin and Yellowstone Counties. In one field observed, the wheat on 70 out of 90 acres was rendered worthless. Fusarium was mentioned associated with Helminthosporium as a causal agent in Minnesota, Kansas, and Montana. Cercosporella herpotrichoides appeared in Idaho, Oregon, and Washington. Hungerford, Raeder, Pierce, and Bever reported that this root rot made its first appearance in epiphytotic form in Idaho, Lewis, Nezperce, Clearwater, and Latah Counties, Idaho, in the spring and summer of 1934. Approximately 157,000 acres were involved with an estimated loss of 10 per cent. In Kootenai County, where the disease has been known to occur previous to 1934, 6,000 acres were involved with an estimated loss of 10 to 15 per cent. Gibellina cerealis was reported from Oregon on both wheat and spelt as well as on Holcus lanatus.

POWDERY MILDEW (Erysiphe graminis) was reported from Pennsylvania, North Carolina, Indiana, Michigan, Kansas, Montana and Washington. Except in North Carolina, where the disease was more prevalent than usual with an estimated loss of 0.2 per cent, powdery mildew caused only traces of injury or was so held in check as to be of no economic significance.

ERGOT (Claviceps purpurea) was reported as occurring in about the usual amount in Ohio and scatteringly distributed in Wisconsin and North Dakota, where it was less prevalent than in 1933.

TAKE-ALL (Ophiobolus graminis) occurred scatteringly in much less than the usual prevalence in Kansas and in a few fields in Idaho where losses were estimated at 2 to 5 per cent.

ANTHRACNOSE (Colletotrichum graminicolum) was less prevalent than usual in Pennsylvania, causing only a trace of loss.

NEMATODE DISEASE (Anguillulina tritici) was reported locally distributed in North Carolina and Georgia.

PHYSIOLOGICAL DISORDERS. Floret sterility resulting from frost injury was reported from Washington. A peculiar condition of wheat heads somewhat resembling black chaff disease in appearance was reported from several localities in northern Illinois. It has been diagnosed as the result of crossing or mixing of strains.

Various abnormalities in growth of heads and spikelets, blasted tips, non-blooming florets, and other malformed organs, due to lack of moisture and excessive heat were reported from Montana.

RYE

STEM RUST (Puccinia graminis secalis). Stem rust was less prevalent than usual. Massachusetts reported 4 per cent loss; Texas 1; and Ohio 0.5. Traces or no injury were recorded for Pennsylvania, Michigan, Wisconsin, Minnesota, North Dakota, Colorado, and Washington.

LEAF RUST (Puccinia rubigo-vera secalis = P. dispersa) occasioned loss as follows: Pennsylvania, 6 per cent; Massachusetts, 2; Georgia, Texas, and Ohio, each 1; Oregon, 0.3; Delaware, West Virginia, North Carolina, Michigan, Wisconsin, each a trace; Minnesota and North Dakota, each no loss.

ERGOT (Claviceps purpurea) was estimated to have caused injury of 1 per cent in Massachusetts and Wisconsin; traces in Pennsylvania, West Virginia, Michigan, Minnesota, and Colorado; 0.1 per cent in Ohio, and 0.6 in North Dakota. In this connection, it is of interest to note that 12.2 per cent of the 433 cars of rye received at Minneapolis in August 1934 were classed as ergoty and 21 per cent of the 240 cars inspected in September. Rye is classed as ergoty when it contains ergot in excess of 0.3 per cent.

STEM SMUT (Urocystis occulta). Two per cent smut was reported locally from Anderson County, Tennessee. No State loss greater than 0.1 per cent was reported.

SCAB (Gibberella saubinetii) was reported from Ohio and Wisconsin with losses of 1 per cent and a trace, respectively.

ANTHRACNOSE (Colletotrichum graminicolum) occasioned a trace of reduction in yield locally in Wisconsin.

WINTER INJURY AND DROUGHT resulted in a 60 per cent loss in Massachusetts.

HEAT AND DROUGHT destroyed 15 per cent of the crop in Wisconsin.

BARLEY

COVERED SMUT (Ustilago hordei). Twenty States reported the presence of covered smut with estimated percentage losses as follows: Maine, Massachusetts, New Jersey, Delaware, Wisconsin, Iowa, Kansas, and Colorado, each a trace; Pennsylvania, 7.6 for fall sown, and 3.5 for spring sown; Georgia, 6; Maryland, 5; West Virginia and Montana, each 2; Texas, Ohio, and Minnesota, each 1; North Dakota, 0.6; North Carolina and Michigan, 0.5; and Oregon, 0.2. Ohio, Minnesota, North Dakota, and Kansas reported the disease more prevalent than in average years, while Maryland, Michigan, and Iowa reported less than the average amount, and Pennsylvania less than in any year since winter barley became generally grown in the State. The maximum injuries reported from single fields were 23 and 20 per cent from Pennsylvania and Kansas, respectively.

LOOSE SMUT (Ustilago nuda) was reported as general in Pennsylvania, Wisconsin, and Iowa. Other States reporting its occurrence are Massachusetts, Maryland, West Virginia, North Carolina, Texas, Ohio, Michigan, North Dakota, Kansas, Montana, and Colorado. The percentage losses follow: Massachusetts, Kansas, and Colorado, each a trace; Michigan and North Dakota, each 0.5; Pennsylvania, 4.6 for fall sown, and 2 for spring sown; North Carolina, 5. Loose smut has been on the increase in Pennsylvania since winter barley became generally introduced into the State. Ustilago medians was reported as generally distributed in Minnesota.

STEM RUST (Puccinia graminis tritici) caused relatively little damage. Maryland, Montana, and Washington reported that the disease was not observed. The losses were light. Massachusetts and Minnesota each reported 2 per cent loss; Ohio and Texas each 0.1; all others only a trace. The rust appeared early but the dry season was inimical to its development and spread.

LEAF RUST (Puccinia anomala) was reported as of general distribution in Pennsylvania and Oklahoma, and scattered in Wisconsin and Minnesota. It also occurred in Maryland, Ohio, and Michigan. Percentage losses reported were: Pennsylvania 2.3; Maryland and Ohio, each 0.5; Michigan, trace; Wisconsin and Minnesota, none. The maximum occurrence in any one field was 10 per cent in Pennsylvania.

STRIPE (Helminthosporium gramineum). The presence of stripe was reported from Massachusetts, Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, Wisconsin, Minnesota, Iowa, North Dakota, and Wyoming. It was more prevalent than last year in Pennsylvania and Virginia, but less prevalent in Minnesota and Iowa where early high soil temperatures were reported as unfavorable for the development of stripe. Distribution of the disease was general in Virginia and North Carolina, scattered in Minnesota and North Dakota, and local in northern Iowa. Seed treatment gave effective control in Pennsylvania and North Carolina. Losses were light, varying from a trace in Massachusetts, South Carolina, and Iowa, to 9.1 per cent for untreated fields in Pennsylvania. Maximum infections of 20 and 15 per cent were reported from Pennsylvania and Minnesota, respectively.

SPOT BLOTCH (Helminthosporium sativum). Spot blotch was reported from Pennsylvania, North Carolina, Texas, Michigan, Wisconsin, Minnesota, Iowa, North Dakota, Montana, and Oregon. It was more prevalent than in 1933 in Pennsylvania and Iowa. It was found in each of 64 surveyed fields in Pennsylvania with an average infection of 11.1 per cent and a maximum infection of 20 per cent. Losses for the State were estimated at 1 and 2 per cent, respectively, for spring and winter barley. In Iowa, loss in yield was put at 1 per cent with additional loss in grade of 0.5 per cent. It is also found in germinators on samples of seed submitted for analysis and is regarded as an important cause of seedling blight in Iowa. The loss in North Carolina was estimated as 1 per cent. Texas, Michigan, Wisconsin, Minnesota, and North Dakota each reported only a trace of infection. None was observed in Massachusetts.

NET BLOTCH (Pyrenophora teres) was reported as less prevalent than in 1933, causing only traces of injury in Pennsylvania, Michigan, Wisconsin, Minnesota, North Dakota, Montana, and Oregon.

SCAB (Gibberella saubinetii). Scab was reported from New Jersey, Pennsylvania, Maryland, North Carolina, Texas, Ohio, Michigan, Wisconsin, Minnesota and Iowa. It was severe in some fields in New Jersey and much more prevalent than in 1933 or in the average year in Maryland where the reduction in yield was estimated as 3 per cent. The loss in North Carolina was placed at 2 per cent. Prevalence in the other States reporting was less than usual with loss of a trace only except in Ohio and Wisconsin where it was estimated to be 2 and 1.8 per cent, respectively.

ERGOT (Claviceps purpurea) was strikingly less prevalent than in 1933. Ohio reported about the usual amount with a total loss in yield and grade of 1 per cent. Wisconsin, Minnesota, and North Dakota each listed only traces. The disease was found in Michigan only as a scattered infection on volunteer barley after harvest.

POWDERY MILDEW (Erysiphe graminis) was reported from New Jersey, Pennsylvania, Maryland, Georgia, and Wisconsin. It was common but not serious, except in a few fields, in New Jersey, slightly more prevalent than in 1933 in Pennsylvania with an average infection of 17.1 per cent and a maximum infection of 60 per cent in the 64 fields surveyed. General and heavy infection of winter barley in North Georgia developed in May. Normal prevalence with loss amounting to a trace was reported from Maryland, and less infection than usual from Wisconsin.

SCALD (Rhynchosporium secalis) was reported only from Wisconsin where it occurred locally and in less amount than in 1933, due, it is believed, to the inhibitory effect of the drought.

BACTERIAL BLIGHT (Bacterium translucens). A heavy epiphytotic of bacterial blight was reported as occurring in the vicinity of Waseca, Minnesota. Seventy varieties of barley on the Experiment Station at Waseca were heavily infected on leaves, awns, and seed.

SEEDLING BLIGHTS (Various Fungi imperfecti). Minnesota reported seedling blights, ordinarily very important, much less prevalent than in average years. The restricted and scattered occurrence was attributed to the dry season.

ROOT ROT (Fusarium spp. and Helminthosporium spp.) was reported as present in considerable amount in Minnesota, as in average years, but associated with drought in such a way as to render difficult the estimation of the amount of injury attributable to each.

OATS

SMUT (Ustilago avenae and U. levis). As in 1933, losses from smut were again relatively heavy in 1934. The estimates follow: Maine, present; Massachusetts, 15 per cent; New Jersey, 8.9; Maryland, West Virginia, North Carolina, Georgia, Wisconsin, Montana, each 5; Texas 3; Arkansas, Ohio, Michigan, Minnesota, and Kansas, each 2; North Dakota, 0.5; Oregon, 0.4; Pennsylvania, Colorado, and Washington, each a trace. Smut was prevalent in New York and Wyoming. In a variety test in Cayuga County, New York, covering 65 acres in 13 localities, the average incidence on Swedish Select was 5.26 per cent and on Cornellian a trace. The maximum infection reported in any one field was 21 per cent. Loose smut continued to be prevalent in Texas, Oklahoma, and Kansas, mostly in the form that attacks Fulghum, according to C. O. Johnston. Following the introduction of the Fulghum type of oats, loose smut increased and rapidly moved northward until it is now coextensive with the distribution of Fulghum. Occasional fields sown with untreated seed had as much as 25 per cent smut. Smut is much more prevalent in northern than in southern Arkansas. Practically perfect control was secured in that State through the use of Ceresan dust and the formaldehyde spray method. In Iowa, in a test with twenty farmers each planting treated and untreated seed, the loss caused by smut was 8 per cent. Late-planted oats in Iowa had less smut because of early high soil temperatures.

STEM RUST (Puccinia graminis avenae). Rust appeared early and abundantly in the Pacific Northwest and in Louisiana and Texas. In Oregon, in common with other cereal rusts, it was held in check by an active attack of Darluca filum but considerable rust occurred on early seeded winter oats. In volunteer oats, stem rust was very destructive. In central Texas, 100 per cent infection was prevalent on both rust-proof and non-rust-proof varieties, but good stands of oats compensated for rust loss. The dry weather checked the spread and development of the disease northward. In Minnesota it was much more prevalent than in 1933 or in average years but in most of the country it was less prevalent or much less prevalent than usual. Losses were estimated as follows: Minnesota, 5 per cent; Texas, 4; Massachusetts, 2; North Carolina, South Carolina, North Dakota, and Oregon, each 1; Ohio, 0.5; Pennsylvania, Maryland, Arkansas, Michigan, Wisconsin, South Dakota, Nebraska, and Washington, each a trace; Illinois, Indiana, Kansas, Montana, Wyoming, and Colorado, each no loss.

Stem rust was also reported from Maine, New Jersey, where it was generally distributed, Louisiana and Oklahoma.

CROWN RUST (Puccinia coronata) was reported as severe in Louisiana, central Texas, and Oregon. In experimental plots of winter oats in Louisiana the heavy infection killed some varieties by heading time. The Victoria, Bond, Alber, and Berger varieties showed promising resistance in Louisiana and Texas. Rust was relatively light in North Texas but the loss for the State was estimated at 20 per cent. In Oregon where crown rust and Fusarium root rot together practically destroyed the crop in the Coast country, the crown rust loss for the State was set at 35 per cent. South Carolina and Arkansas each estimated losses of 5 per cent; West Virginia, 2; Georgia, trace to 1 per cent, and North Carolina, 0.2 to 1 per cent; New Jersey, Ohio, 0.5; Wisconsin, 0.1; Massachusetts, Delaware, Maryland, Iowa and North Dakota, each a trace; Minnesota, Kansas, and Montana, each 0.

FOOT ROT (Gibellina cerealis). The fungus designated tentatively as Gibellina cerealis Pass. appeared in the coastal region of Oregon in January, 1934, four months earlier than it had been seen in any of the three previous years during which it has been under observation there.

FOOT ROT (Fusarium spp.) was reported from Michigan and Oregon. In Michigan this disease was less prevalent than in 1933 or in average years, causing only a trace of loss. In the Coast country of Oregon, as previously recorded, foot rot and crown rust virtually destroyed the crop. The loss for the State from foot rot is estimated at 10 per cent.

SCAB (Gibberella saubinetii) was observed in Maryland, Wisconsin, and Ohio. Losses were negligible.

HALO BLIGHT (Bacterium coronafaciens) was observed in New York and Minnesota. Swedish Select in New York showed high resistance even when grown near infected Cornellian. In Minnesota, the disease was generally distributed but less prevalent than usual, causing no loss.

POWDERY MILDEW (Erysiphe graminis) was observed in the Puget Sound area in Washington, and in New Jersey.

LEAF SPOT (Helminthosporium avenae) caused a trace of injury in Michigan. Maximum infection of 15 per cent was observed.

BLAST (cause undetermined) was observed in North Dakota in about the same prevalence as in 1933. The loss was estimated at 0.5 per cent.

RED BLADE (Nutritional disturbance) was reported from Washington.

STERILE HEADS (Frost injury). Frost injury caused an appreciable number of partly sterile heads in Washington.

CORN

SMUT (Ustilago zeae). Of the twenty-nine States reporting the incidence of corn smut, four reported it as more prevalent than in 1933 and seven (three in addition to the four) as more prevalent than in average years. One, Maryland, reported less than last year and one, Kansas, much less because so much of the corn crop was completely killed by the drought and heat. Twelve States reported the incidence of smut the same as last year which was higher than in normal seasons. Thirteen varieties in experimental plots in Georgia had an average of 25 per cent of ear infection. Tennessee and Indiana reported maximum incidence of 25 and 20 per cent, respectively, in some fields. Percentage losses were estimated as follows: 7 in Iowa; 5 Pennsylvania and Georgia; 4, Michigan, Minnesota; 3, West Virginia, Ohio, Wisconsin; 2, Massachusetts, North Dakota; 1, North Carolina, Texas, Arkansas, Indiana, Kansas, Colorado; 0.5, South Carolina, Florida; trace, Delaware, Maryland, Montana, Washington. Connecticut reported the disease as "bad on certain varieties"; New Jersey, "generally distributed and severe in some instances," Tennessee and Wyoming, "generally distributed"; Louisiana, "severe in the southwestern part of the State." Mississippi reported the usual incidence.

HEAD SMUT (Sorosporium reilianum) was reported from Oregon as the cause of 0.4 per cent loss; and occurred in Washington also.

RUST (Puccinia sorghi) was unimportant, as usual. The greatest losses estimated were 2 per cent in Georgia and 1.5 per cent in Florida. Other losses did not exceed 0.5 per cent.

ROOT ROTS (Various organisms) were reported from Massachusetts, 2 per cent; Pennsylvania, trace; Delaware, 1; Maryland (Gibberella saubinetii) 10; West Virginia, 2; North Carolina, 3; South Carolina, 5; Florida, 0.5; Texas, 0.1; Ohio, 0.5; Indiana, trace; Michigan, 0.5;

Wisconsin, 1; Minnesota, trace; Kansas, 1; Montana, same; Oregon, 0.1. In South Carolina root rots and potash deficiency seem to be closely related and estimates of loss from root rots alone are difficult since applications of potash seem greatly to reduce such losses. Seedling blight and root rots were reported as follows: Ohio (Gibberella, Fusarium, Diplodia, etc.), trace; Indiana (Penicillium spp), 1 per cent, (Gibberella saubinetii), trace. In Indiana, Pythium spp. caused only isolated cases of seedling blight but appeared late in the season as the cause of root rot with a maximum infection of 100 per cent in some fields but resulting in only a trace of loss. Rains following the drought period that had lasted through pollination were conducive to heavy cortical root rotting by this organism.

STALK ROTS (various organisms other than Diplodia). Losses due to stalk rots were reported as follows: Massachusetts, trace; New Jersey (Fusarium spp.), less than usual; Pennsylvania, 5 per cent; West Virginia, 1; North Carolina, 1; Georgia, 3; Florida, 3; Texas, 1; Wisconsin, 9.9; North Dakota (Fusarium spp.) 1; Kansas, trace. Root and stalk rots in combination were reported from New Jersey (Fusarium spp.) and Florida (Gibberella saubinetii) with loss a trace. Stalk and ear rots due to Basisporium gallarum and Fusarium moniliforme were reported more prevalent than usual in Wisconsin causing an estimated loss of 2 per cent.

EAR ROTS (various organisms other than Diplodia) were reported from Massachusetts, trace; Pennsylvania, 10 per cent; Maryland, 5; West Virginia, 3; North Carolina, 3; Georgia, 3; Florida, 7; Texas, 0.5; Indiana (Aspergillus), trace, (Fusarium), 1.5, (Penicillium), 1.5; Michigan (Fusarium) 0.2; Wisconsin, 1; North Dakota, 5; Kansas, trace. Dry weather gave rise to poor husk covering of ears in Indiana and the high temperatures at pollination time caused poor filling providing moisture pockets and dead silks for growth of rot producing organisms, which were further aided by corn ear worm injury. In the south-central and southern parts of the State some infection was present on almost every ear. Maximum infections were reported for individual fields in the State as follows: Fusarium spp., 100 per cent; Aspergillus, 80, Penicillium, 80. Fusarium was also reported as prevalent in the Coastal Plain and Piedmont of North Carolina causing an estimated loss of 20 per cent.

Gibberella saubinetii was reported as the cause of ear rot locally in Mississippi and of a trace of loss in Indiana where only two or three cases of ear rot due to this organism were found during the entire harvest season. Diplodia zeae was reported to occur causing losses as follows: Massachusetts, 1 per cent; Pennsylvania, trace; West Virginia, 1; Kentucky, 4 to 18, with average of 8 in variety and strain cross tests at Lexington; Florida, 7; Louisiana, Texas, 1; Ohio, 2; Indiana, 4.5; Michigan, 0.3; Wisconsin, 1; Iowa, 9; Montana, trace. Diplodia zeae and various other organisms were reported together as causing ear rots as follows: Maryland (with Fusarium), 5; Georgia (with Fusarium moniliforme) in Rabun County, 5; Ohio (with Fusarium, Gibberella, etc.), 0.5. In Florida, root, stalk, and ear rots were reported as follows: Diplodia frumenti, 1.5 per cent; Diplodia macrospora, 2.5; Diplodia zeae, 3; Gibberella moniliformis, 5. Ear and stalk rots due to Diplodia and other organisms were reported from South Carolina and Minnesota causing 5 per cent loss in each State. Phoma zeicola was reported as the cause of ear rot in Texas.

BASISPORIUM DRY ROT (Basisporium gallarum) was generally distributed in Iowa causing a loss of 3 per cent. It occurred locally in Indiana causing a reduction in yield of a trace and a total loss of 1 per cent with a maximum infection of 65. Its presence in Wisconsin in association with stalk and ear rot has been recorded above.

BLACK BUNDLE (Cephalosporium acremonium) caused a trace of loss in Indiana with a maximum incidence of 50 per cent. Drought during the pollination period coupled with intense heat caused a high percentage of barrenness. The disease entered and developed in such stalks during wet weather in the ripening period.

BROWN SPOT (Physoderma zeae-maydis) was reported from North Carolina causing loss of 0.2; northeast Georgia, 5; Florida, 4; Mississippi, scattered occurrence; Louisiana, usual slight amount.

BACTERIAL STALK ROT (Bacterium dissolvens) occurred in scattered localities in Mississippi, and in the extreme southern section of Indiana where it had not been observed previously.

BACTERIAL WILT (Aplanobacter stewarti). Incidence of bacterial wilt on field corn was reported as follows: Georgia, 10 per cent locally on young plants near Cleveland in May; Indiana, trace; Kansas, local. It was also reported on popcorn in Indiana but was less prevalent than in 1933.

LEAF BLIGHT (Bacterial) was generally distributed in Indiana but was less prevalent than in 1933. The maximum incidence was estimated at 90 per cent but the total loss was only a trace.

LEAF SPOT (Helminthosporium turcicum) caused an estimated loss of 1 per cent in Florida.

MOSAIC (Virus) occurred generally scattered over southwestern Louisiana. The amount of injury is undetermined.

DROUGHT INJURY. Physiological disorders associated with or emphasized by the lack of moisture and the high temperatures were important factors in the low yields of corn. Marked reductions in yield were reported from Arkansas and Indiana. Pollination failures were reported of general occurrence in Indiana causing total loss of some fields and an average reduction in yield for the State estimated at 5 per cent with loss in grade of another 5 per cent. Disturbed nutrition associated with excess or unbalanced nitrate supply caused loss estimated at 10 per cent of the crop, with maximum injury of 90 per cent. Nutritional deficiencies due to unbalanced or inadequate supplies of potash or phosphate were believed to cause additional losses of 5 per cent with some fields a total loss. Moisture deficiency was estimated to have caused a loss of 35 per cent with injury as high as 85 per cent in some fields. In the East, Massachusetts reported 10 per cent loss due to drought. Other States affected made no reports.

Acid soil conditions were reported as the cause of poor germination in New Jersey. Smelter fumes injured fields in Washington State.

SWEET CORN

SMUT (Ustilago zeae) was reported from Maine, Massachusetts, New York, Pennsylvania, Maryland, West Virginia, Texas, Ohio, Michigan, Wisconsin, Minnesota, North Dakota, Montana, and Colorado. In Massachusetts it is considered the most damaging disease of the crop, year in and year out. In 1934, it caused more damage than all other diseases combined. The moderately wet spring followed by relatively dry summer weather appeared to be most favorable for smut injury. The disease spread rapidly and extensively during the dry weather requiring only the wind to disseminate the spores, and dews to effect new infections. In New York, smut was more prevalent than usual. Losses as high as 25 per cent of ears occurred in several fields. Losses were estimated at 5 per cent in Massachusetts, New York, Pennsylvania, Wisconsin, and Minnesota. Maryland, Texas, and Michigan each reported 1 per cent as did Ohio where there was less infection than in average years. North Dakota reported 2 per cent loss and Montana a trace.

RUST (Puccinia sorghi) was general and severe in the late summer or fall in Nassau and Suffolk Counties, New York. Infection was 100 per cent but the loss amounted to only a trace. Rust was reported as more prevalent than usual in Maine.

ROOT, STALK, AND EAR ROTS (Various organisms)

ROOT ROTS caused an estimated loss of 8 per cent in Maryland.

STALK AND EAR ROT (Diplodia and other organisms) was reported to occur as follows: Maine and Michigan, each a trace; Massachusetts and Texas, each 2 per cent; Pennsylvania, 5; Maryland, Wisconsin, and Minnesota, each 1; and West Virginia, 3.

BACTERIAL WILT (Aplanobacter stewarti) was very much less prevalent than in 1933 in all the States reporting its presence except in Maryland, Pennsylvania, Virginia, and Texas. The usual amount was reported from Virginia and more than last year from Maryland where the drought was reported to emphasize the symptoms. Only a trace with no loss was reported from Maine and none was found in a survey of New Hampshire sections where the disease was destructive in 1933. A similar report of non-appearance was received from southwestern Ontario. The recession in distribution and severity was attributed in the northeastern sections to the cold winter, and in Indiana and Michigan to the dry spring which appeared unfavorable for the spread of the disease. In Michigan, there was practically no infection on early varieties until ready for harvest as green corn. Mid-July rains brought heavy infections, even to Golden Cross Bantam and Purdue 1339, frequently mentioned as more resistant than common varieties. Percentage losses were reported as follows: Maine, Massachusetts, Connecticut, New York, Wisconsin, and Kansas, each a trace; Texas, Ohio, and Michigan, each 3; West Virginia and Indiana, each 5; Pennsylvania, 20. Other States reporting occurrence are Kentucky and Iowa.

SORGHUM

HEAD SMUT (Sorosporium reilianum) occurred in scattered localities in Wisconsin.

COVERED KERNEL SMUT (Sphacelotheca sorghi) was reported from Wisconsin, and Kansas.

SMUT (not specified) was also reported from New Jersey and Arkansas.

CROWN ROT AND ROOT ROT (Pythium spp.) was more prevalent than usual locally around Garden City, Kansas, infection amounting to 100 per cent in some fields.

ANTHRACNOSE (Colletotrichum lineola) was reported locally severe on cane sorghum in Sevier County, Tennessee, and on broom corn in Mississippi.

FLAX

WILT (Fusarium lini) was reported prevalent in Wisconsin and North Dakota to about the same extent as in 1933.

RUST (Melampsora lini) was observed in Wisconsin, North Dakota, but was less prevalent than in average years. The dry season was unfavorable to the development of the disease. According to P. A. Young, rust was not seen on the wild flax, Linum lewisii, in the Bridges Mountains in Montana, in either of the dry seasons 1933 or 1934, although previously abundant in the vicinity of the College "M" on Mount Baldy.

PASMO (Phlyctaena linicola) occurred scatteringly in Wisconsin.

HEAT CANKER (Non-parasitic) occurred generally on flax in North Dakota. The reduction in yield was estimated at 1 per cent.

RICE

STEM ROT (Leptosphaeria salvinii) was less prevalent than last year in Arkansas.

LEAF SPOT (Helminthosporium oryzae) was generally distributed in Arkansas with about the usual prevalence.

SMUT (Tilletia horrida). Arkansas reported that smut was not observed.

BLAST (Piricularia grisea) was reported from Louisiana.

STRAIGHTHEAD (Non-parasitic). Reported in Arkansas.

DISEASES OF FORAGE AND COVER CROPS

ALFALFA

BACTERIAL WILT (Aplanobacter insidiosum). A loss of 5 per cent was reported from Massachusetts where wilt was generally distributed and apparently aggravated by the drought conditions in July and August. It was noted with scattered distribution in Wisconsin, Kansas, and Colorado in less than the usual prevalence, In California, Weimer reported it from three localities in the southern part of the State where it was not previously known. He states that the direction of spread into this new territory suggests that the high winds characteristic of this region at times may be an important factor in the distribution of this disease. In Wyoming the disease was general in irrigated fields of Grimm and common alfalfa, the only varieties grown commercially, and caused a loss of 15 to 25 per cent.

STEM ROT (Sclerotinia trifoliorum) was reported from Idaho and Washington. Hungerford, Raeder, Pierce, and Bever wrote, "During the early growing season of this year following a very unusual open winter, ranchers in various localities in northern Idaho complained of their alfalfa stands thinning out. Decrease in stand was in most cases accompanied by wilting and death of some of the plants. Isolations made from such plants resulted in securing Sclerotinia trifoliorum Eriks. in a majority of cases.

"The stem and root rot of legumes is a fairly common disease in the northern section of the State, particularly in cut-over land. Only once before in the last 15 years, however, has this disease caused appreciable loss. In 1928, the disease was prevalent on various clovers and alfalfa. Many fields of clover in Bonner and Kootenai Counties were plowed up due to the killing of the plants by this root rot organism. Evidently, this disease can be expected to be more prevalent and to do serious damage following mild winters."

BLACK STEM (Phoma medicaginis) was locally present in northern Colorado and was first definitely identified this season in Idaho from specimens secured from several points in the northern part of the State. It was found at three widely separated sections, namely, Shoshone, Kootenai, and Latah Counties.

VIOLET ROOT-ROT (Rhizoctonia crocorum) was observed in Kansas.

DAMPING OFF (Pythium spp.) was present to about the usual extent in Louisiana. A marked decrease in stand of fall-sown alfalfa was reported from scattered localities in Kansas with infections of as high as 20 per cent. Damping off due to undetermined causes was so severe locally in southern California during the spring that replanting was necessary.

DOWNY MILDEW (Peronospora trifoliorum) was reported from New Jersey, Louisiana, and California.

LEAF SPOT (Pseudopeziza medicaginis) was reported generally distributed in New Jersey, Michigan, and Wisconsin and scatterintly present in Kansas and North Dakota. It occurred also in Connecticut, Wyoming, Colorado, and California. It caused less than the usual amount of damage. No more than a trace of injury was reported.

YELLOW BLOTCH (Pyrenopeziza medicaginis) was more prevalent than usual and generally distributed in Kansas. It also was reported from Washington.

LEAF SPOT (Cercospora medicaginis) was present in Georgia.

RUST (Uromyces medicaginis) was reported as common but not serious in New Jersey; prevalent from August first on in the Athens, Georgia, area, where it caused up to 70 per cent defoliation; and somewhat more severe than usual in southern California where it was the only leaf trouble of much importance.

CROWN WART (Urophlyctis alfalfae) was found in very limited amounts at Riverside, California.

RING SPOT (Virus). Only traces of this disease were seen in Montana in 1934. It was not found at all in a field where it was abundant during the three preceding years.

MOSAIC (Virus) was reported from California where it was less conspicuous than usual.

WITCHES BROOM (Virus?) was observed in Washington.

DWARF (cause unknown) was observed in California. Weimer reported that the disease appears to be quite uniform in the amount of damage it causes from year to year.

YELLOWS (due to the potato leaf hopper, Empoasca fabae) was generally distributed and more prevalent than in 1933 or in average years in Wisconsin.

VIRESCENCE. This teratological condition was reported from Washington.

WHITE SPOT (non-par) was reported prevalent in several fields in Middlesex County, New Jersey.

ALBINISM (Physiological). Young reported much less of this trouble than in 1933 or in average years in Montana. It was not noticed in fields in Park County where it had been common for the preceding 8 years. The suggestion is offered that the weak albino plants were unable to survive the drought.

WINTER INJURY (non-parasitic). Reported as generally distributed and much more prevalent than in 1933 in Wisconsin where the hot, dry summer accentuated the injury. In North Dakota, as in 1933, winter injury was more prevalent than in average years. The extremely dry soil favored the injury which caused a loss estimated at 10 per cent.

CLOVER

POWDERY MILDEW (Erysiphe polygoni) was reported from Massachusetts, Connecticut, New Jersey, Pennsylvania, Georgia, Wisconsin, Kansas, and Washington. It was very prevalent throughout New Jersey and very serious on Trifolium pratense in north Georgia, preventing its growth, and also occurred on T. dubium and T. reflexum but not on T. incarnatum. The damage elsewhere was apparently slight, particularly in the sections where dry, hot weather prevailed.

ANTHRACNOSE (Colletotrichum trifolii) was observed in New Jersey on Italian Red Clover at the College Farm; prevalent in about the usual extent in Tennessee, and in less than average quantity in scattered localities in Wisconsin.

STEM ROT (Sclerotinia trifoliorum) was reported from Washington.

RUST (Uromyces spp.). Uromyces trifolii fallens was reported from Connecticut on Trifolium pratense and from New Jersey; U. trifolii hybridii on T. hybridum from Massachusetts, Connecticut, and Washington; U. trifolii trifolii-repentis from Massachusetts; and U. minor on T. eriocephalum from Washington.

SOOTY SPOT (Phyllachora trifolii) present but not severe in New Jersey.

LEAF SPOT (Septoria trifoliorum) present but not severe in New Jersey.

LEAF SPOT (Cercospora spp.) New Jersey.

NEMATODE (Anguillulina dipsaci) occurred in experimental plantings, Long Island, New York, on Trifolium arvense and T. repens.

MOSAIC (Virus) was of common occurrence in New Jersey and was reported as causing 1 to 2 per cent loss in Tennessee.

HOPPER INJURY (Leaf hoppers) was serious in some fields in New Jersey.

SWEET CLOVER

STEM SPOT (Mycosphaerella lethalis)? A stem spot submitted from Pennsylvania was tentatively but not definitely attributed to Mycosphaerella lethalis.

MOSAIC (Virus) Washington.

RING SPOT (Virus) was reported as common on many varieties of white sweet clover and on ordinary biennial yellow sweet clover in Montana.

LEAF SPOT (Ascochyta meliloti) was reported on Melilotus indica from Louisiana.

COWPEA

WILT (Fusarium vasinfectum tracheiphilum) occurred in small amounts in Clarke, Oconee, and Oglethorpe Counties, Georgia and was generally distributed in about the usual prevalence in Mississippi.

DRY ROOT ROT (Fusarium martii phaseoli) occurred in scattered localities in Georgia.

ROOT KNOT (Heterodera marioni) was reported from scattered localities with about the usual prevalence in Mississippi.

POWDERY MILDEW (Erysiphe polygoni) caused 10 to 15 per cent defoliation in July and August in three counties in North Georgia.

LEAF SPOT (Cercospora spp.) was present but not serious in New Jersey.

POD BLIGHT (Bacterium phaseoli). Locally prevalent in about the usual amount in Mississippi.

SCAB (Cladosporium vignae). North Carolina.

GRAY MOLD (Botrytis spp.). New Jersey.

MOSAIC (Virus) was general in New Jersey.

HOPPER INJURY (Leaf hoppers). Local in New Jersey.

AUSTRIAN WINTER PEA

LEAF AND POD SPOT (Ascochyta pisi) appeared late in Georgia, but by June 8 pycnidia were common on pods and leaves.

LEAF BLOTCH (Septoria pisi) developed in considerable amounts in Georgia. It was first noted about May 1.

MYCOSPHAERELLA BLIGHT (Mycosphaerella pinodes) appeared about May 1, in Georgia. It was especially severe in fields previously planted to peas.

FOOT ROT AND BLIGHT (Ascochyta pinodella) developed in Georgia about May 24.

BACTERIAL BLIGHT (Bacterium pisi). This disease appeared in Georgia in April destroying the lower leaves on infected plants and killing some vines outright. The average loss was estimated at 10 per cent.

POWDERY MILDEW (Erysiphe polygoni) first appeared in northern Georgia about June 1. It is reported as always serious in southern Georgia.

SOYBEAN

BACTERIAL PUSTULE (Bacterium phaseoli sojense) was generally distributed and more prevalent than in 1933 in North Carolina where it caused an estimated 2 per cent loss with a maximum incidence of 80 per cent. In the vicinity of Athens, Georgia, losses amounted to 10 per cent. Due to the dry season, it was less prevalent than in former seasons in Arkansas, where it is regarded as the most serious disease of soybeans, causing premature shedding of the leaves.

BACTERIAL BLIGHT (Bacterium sojae) caused the usual trace of loss in North Carolina.

FROGEYE (Cercospora diazu) was general in North Carolina and severe on some varieties. Loss was estimated at 1 per cent. In Arkansas, late maturing varieties were most severely attacked.

POD BLIGHT (Diaporthe sojae). Almost no pod blight was seen in New York as each grower was careful to procure healthy seed. Mid-September rains gave favorable conditions for the development of rather heavy infection in northern Illinois as well as scattered outbreaks in the central part of the State, but subsequently clear weather checked the spread of the disease.

STEM ROT (Sclerotium rolfsii) occurred in local areas in North Carolina causing an estimated loss of 1 per cent.

CHARCOAL ROT (Rhizoctonia bataticola) was reported from California, with the comment that there appears to be varietal resistance among soybeans.

MOSAIC (Virus) was reported from New Jersey but not of great importance, and from Arkansas where it is gradually spreading.

NEMATODE (Anguillulina dipsaci). In experimental plantings on Long Island, New York, soybean proved susceptible and was recorded as a new host for this nematode.

PHYSIOLOGICAL DISORDERS due to lime deficiency and to unbalanced or deficient soil chemicals were reported from New Jersey.

CROTALARIA

STEM CANKER (Diaporthe crotalariae) is severe on Crotalaria spectabilis in Florida. In 1934 it appeared with about the same prevalence as in 1933 and more severely than in average years. A maximum infection of 60 per cent was observed in fields of this important cover crop.

MOSAIC (Virus) was reported on Crotalaria sp. in Puerto Rico, but was less prevalent than usual, probably because the growers have adopted the practice of roguing out volunteer plants.

LESPEDEZA

RUST (Uromyces lespedezae-procumbentis) was very serious on native species in late season in Clarke County, Georgia.

VETCH

LEAF SPOT (Ascochyta pisi) occurred in New Jersey and Mississippi.

GRASSES

Some diseases of grasses in Oregon and Washington are listed in the Reporter 18: 24-25, 1934.

SMUTS: Tilletia sp. was reported on Agropyron cristatum, crested wheat grass, from Washington.

Tilletia anthoxanthi was collected on sweet vernalgrass, Anthoxanthum odoratum, in Lycoming and Bradford Counties, Pennsylvania, by G. L. Zundel, who states that these are the fifth and sixth North American collections of the fungus.

Tilletia decipiens was reported on seaside bent, Agrostis palustris (A. maritima) from Oregon.

Ustilago hypodytes was reported from New York and on quincy grass or Indian rice grass, *Oryzopsis hymenoides*, from Washington.

Ustilago rabenhorstiana. One hundred per cent infection developed on crabgrass, *Digitaria sanguinalis*, in several fields near Athens, Georgia.

Ustilago striaeformis was reported from Massachusetts.

RUSTS: *Puccinia glumarum* occurred on *Agropyron cristatum* in Washington.

Puccinia graminis was reported on redtop, *Agrostis alba*, from Connecticut and New Jersey. It was very serious in some plantings of timothy, *Phleum pratense*, in New Jersey, and was reported on timothy from Montana also.

Puccinia purpurea was severe in isolated patches of Johnson grass, *Sorghum halepense* (Holcus halepensis), near Athens, Georgia, in August and September.

ERGOT: *Claviceps paspali* was common on *Paspalum* spp. in Clarke County, Georgia.

BLAST: *Piricularia grisea* was very severe on crabgrass in Middlesex County, New Jersey, and was common on other grasses.

LEAFSPOT: *Phyllachora vulgata* was reported on *Muhlenbergia schreberi* from Georgia. *Septoria* sp., New Jersey. *Helminthosporium* sp., Massachusetts, New Jersey, and on crabgrass from Mississippi. *H. vagans* was serious locally in New Jersey on bluegrass, *Poa pratensis*.

BLIGHT due to *Helminthosporium gramineum* killed patches in lawns in Georgia.

BROWN PATCH: *Helminthosporium vagans* was very common throughout New Jersey, and *Rhizoctonia* sp. occurred in several golf courses. Brown patch was also reported from Massachusetts.

SNOW MOLD: *Sclerotium rhizodes* was reported from Connecticut. *Fusarium nivale* was very severe in some plantings in New Jersey.

DAMPING OFF: *Pythium* sp. caused damping-off of bent grass, *Agrostis* spp., in New Jersey.

SLIME MOLDS. *Fuligo septica* was reported from New Jersey. *Physarum cinereum* occurred in New Jersey, the District of Columbia, and Mississippi.

SUNFLOWER

RUST (Puccinia helianthi) was reported much worse than in former years in Massachusetts where it caused 10 per cent loss. In Connecticut it was frequently seen on the wild species of Helianthus and was reported once as common on the cultivated H. annuus. Because of the dry season it was less prevalent in Wisconsin than in average years.

STEM ROT (Sclerotinia sclerotiorum). Washington.

POWDERY MILDEW (Erysiphe cichoracearum) was more prevalent than in 1933 or in average seasons in Massachusetts. It was less prevalent than usual in Wisconsin.

DISEASES OF FRUITS AND NUTS

APPLE

SCAB (Venturia inaequalis). Twenty-six States reported the presence of apple scab. Of these, Maine, New York, New Jersey, Georgia, and Western Washington gave no comparative figures. Delaware, Maryland, and Western Oregon reported increased prevalence; New Hampshire, Connecticut, and Virginia recorded the usual amount; while Massachusetts, West Virginia, Kentucky, Tennesses, Arkansas, Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, and Kansas noted less or much less than in average years. The following remarks were characteristic explanations offered. Illinois: The season of 1934 was unique in that injury from the common fruit diseases was almost entirely eliminated not by spraying but by the very dry weather which prevailed throughout the growing season. Kentucky: The spring was dry in Kentucky, so much so that scab infections are extremely rare on unsprayed apples. See P.D.R. 18: 33, 41, 47, 79, 97, 98, 103, 108, 109, 117, 118, 125, and 154. Those States reporting losses of over 1 per cent were Tennessee, 10; Virginia, 8; Maryland, 5: Wisconsin, 5; Massachusetts, 3.

BLOTCH (Phyllosticta solitaria). Blotch was reported from New Jersey, Delaware, Maryland, Virginia, Tennessee, Mississippi, Ohio, Indiana, Illinois, Wisconsin, Iowa, Missouri, and Arkansas. With the exception of Delaware where more was reported, and Tennessee, Mississippi, and Iowa, where the usual amount was noted, the States reported less than in an average year as indicated by such remarks as--Virginia: less; precipitation low in May, June, and July. Arkansas: Leaf and fruit lesions practically non-existent in commercial districts. Illinois: Blotch was rare even on those varieties susceptible to the disease. Wisconsin: Less, too dry. Kansas: much less; very little observed.

APPLE RUST (Gymnosporangium spp.) was reported to be so much more prevalant than usual in Ohio that growers did not recognize it as rust. In Indiana, the disease was general and severe, with slight infection even on resistant varieties. It occurred in Connecticut and Delaware and was less prevalent than usual in Massachusetts, Virginia, West Virginia, Kentucky, Georgia, Wisconsin, Minnesota, and Kansas due to the lack of early spring rains and the consequent failure of the spore horns to gelatinize while the foliage was coming out. Extensive cedar cutting reduced the amount of the disease in Virginia. G. clavipes was reported from New Jersey, Tennessee, and Mississippi. G. globosum was noted in New Hampshire. P. D. R. 18: 13, 58, 98, 109, 117, 118, 163.

BLACK ROT (Physalospora obtusa) was more prevalent than usual in Virginia, Tennessee, and Indiana. Elsewhere there was the usual prevalence, or less. Average losses were recorded as follows; Massachusetts, Virginia, Tennessee, 3 per cent, Ohio, 2, and Maryland, 1.5. According to J. C. Dunegan and M. A. Smith, the disease was practically absent from Arkansas and Missouri. Other States recording its presence are New Jersey, Delaware, West Virginia, Mississippi, Wisconsin, Minnesota, Kansas, and Washington. P. D. R. 18: 108; 19: 2-7.

BITTER ROT (Glomerella cingulata) was reported to be more prevalent than usual in West Virginia due to late summer local showers, and in Tennessee; less prevalent in Arkansas and Indiana due to drought and high temperatures; about the same in Maryland, Virginia, Mississippi, and Ohio. It was reported as severe on Grimes Golden, Winter Banana, and Maiden Blush varieties in New Jersey; common on Stark in Delaware, and occurring in Georgia. P. D. R. 18: 117, 157, 165.

BLIGHT (Bacillus amylovorus) was reported from 20 States. It was more prevalent than in 1933 in Maryland, Tennessee, Mississippi, Indiana, Illinois, and Montana; less severe in Massachusetts, Connecticut, Virginia, Michigan, Wisconsin, Minnesota, and Kansas; and occurred in about the usual amount in Arkansas, Ohio, North Dakota, and Wyoming. Incidence was reported in New Jersey, and locally in the Manson district in Washington. R. E. Vaughan reports that campaigns for pruning out cankers following harvest are gaining in popularity in parts of Wisconsin. Application of a 1-3-50 Bordeaux mixture when 25 per cent of the blossoms were open resulted in appreciable reduction of blossom blight in New Jersey. Blossom blight on Jonathans was destructive enough to ruin the entire crop in some orchards in Illinois. Average percentage losses were reported as follows: Tennessee and Ohio, 5; Maryland, 3; Massachusetts, Indiana, and Wisconsin, 2; North Dakota, 1.5; Virginia, 1. See P. D. R. 18: 2, 13, 98, 109, and 125.

CROWN GALL (*Bacterium tumefaciens*) was reported from New Jersey, Maryland, Tennessee, Georgia, Wisconsin, Minnesota, and Kansas.

POWDERY MILDEW (*Podosphaera leucotricha*) caused as high as 25 per cent fruit loss on the Jonathan variety in a few orchards in Washington, although the average loss was less than 5 per cent. This was the worst mildew year since 1928. The disease was also severe in New Jersey on Astrachan, Winesap, and Transparent varieties. It was not observed in Minnesota.

FRUIT SPOT (*Mycosphaerella pomi*) was noted in New Jersey, very severe on unsprayed trees; also in Delaware, Maryland, and Ohio.

BITTER PIT (non-par.) was reported from Massachusetts, New Jersey, Maryland, Wisconsin, and Washington.

SOOTY BLOTCH (*Gloeodes pomigena*) was much more prevalent in Delaware, Maryland, and Tennessee than in an average year. Its presence was also noted in New Hampshire and New Jersey.

FLY SPECK (*Leptothyrium pomi*); Maryland, Tennessee, and Wisconsin, caused very little damage.

ANTHRACNOSE (*Neofabraea malicorticis*). In Oregon, it was readily controlled in orchards sprayed with Bordeaux mixture, but in neglected orchards it caused considerable damage. Many young trees were so severely damaged that their removal will be necessary. Washington also reported its presence.

HYPOCHNOSE (*Corticium stevensii*) was reported as occurring on unsprayed trees in Georgia.

ROOT ROT (*Xylaria* sp.). In Georgia in one orchard of 600 Golden Delicious trees, 200 died in their sixteenth to twentieth years from this cause. Tennessee reported 3 per cent loss for the State with a maximum infection in one orchard of 25 per cent.

STEM ROT (*Sclerotium rolfsii*) was reported as killing three young apple trees in Virginia.

MEASLES (cause unknown) was reported from New Jersey and Ohio.

WINTER INJURY was severe in the Northeast. Killing of trees, or die-back, and spur injury were reported from Maine, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Virginia, and Wisconsin. Die-back and frost injury were reported from Washington. P. D. R. 18: 34, 35, 36, 37, 123.

DROUGHT INJURY. A report on the effect of drought and high temperatures on fruit crops in the Ozark region of Arkansas and Missouri is given in P. D. R. 19: 2-7. Scald due to high temperature and drought was reported from New Jersey. Growth cracks caused unusual damage to Stayman Winesap apples in certain orchards in Tennessee, where the last half of July and the month of August were exceptionally dry, followed by heavy rains early in September. Water shortage was reported as the cause of a drought spot in Washington.

Virginia reported internal cork was again common on Ben Davis for the first time since 1930. 1934 had more days over 100° F. than 1930, and many over 90°. Most of the loss was on high ground. The loss in grade for Ben Davis was estimated at 20 per cent, with a maximum incidence of 95 per cent.

West Virginia reported an internal browning of Ben Davis and Gano varieties as probably causing more loss than all other conditions combined. The injury was attributed to the dry summer, low humidity, and high temperatures.

WATER CORE (non-par.) was reported as severe on Transparent and Northern Spy varieties in New Jersey and prevalent on Duchess in Delaware.

INFECTIOUS CHLOROSIS or VARIEGATIONS (virus) was observed in Benton County, Washington.

ROOT KNOT (*Heterodera marioni*) occurred generally distributed in Mississippi.

ROOT ROT (Undetermined cause). Reported from north Georgia where a fungus with a white mycelium was associated with the dead lateral roots of the dying trees.

In Raglan township, Iowa, a root rot of undetermined cause has appeared on areas from a quarter to two acres in extent where the trees are killed. Some of these spots have been replanted as many as three times.

PEAR

SCAB (Venturia pyrina). Massachusetts, New Jersey, Virginia, Ohio, Wisconsin, and Kansas each report less than usual; Connecticut, Maryland, and Washington, the average amount; in no case was the estimated loss above 1 per cent.

In Oregon, according to L. R. Childs, "The increase in pear scab that occurred in various parts of the Hood River Valley during the past season without question presents the most important unsolved problem in the control of disease within this district. The fungus has been gradually spreading from two or three rather insignificant infections in 1930 and 1931 to the extent that it now involves several hundred acres in two important pear sections of the district. The Anjou pear, the most important variety, appears to be the most susceptible. At the present time, we have no satisfactory means of control owing to the fact that this variety is injured by our most effective spray applications. It is estimated that at least 5 per cent of the crop of the district was affected, ranging up to 50 per cent loss in the centers of attack."

BLIGHT (Bacillus amylovorus). Of the 13 States reporting on the comparative prevalence, 3, Mississippi, Louisiana, and Arkansas observed much more than usual; 7, Maryland, Virginia, Tennessee, North Georgia, Ohio, Michigan, and Kansas noted less; and Massachusetts, Connecticut, and Wisconsin estimated about the same as usual. New York, Illinois, and Washington also reported the presence of the disease. Estimated percentage losses ran as follows: Tennessee, 20 per cent; Massachusetts, 7; Virginia, 5; Michigan and Maryland, 1; and Ohio, .5. See P. D. R. 18: 13, 96, and 97.

LEAF BLIGHT (Fabraea maculata). Delaware reported much more than usual with as high as 50 per cent defoliation on unsprayed trees. There was less infection than normal in New Jersey, Louisiana, and in Illinois, where general absence was reported. Virginia reported less than in 1933 but about the usual amount. Maryland recorded 4 per cent loss.

LEAF SPOT (Mycosphaerella sentina). In Georgia, 100 per cent infection was observed in nurseries on leaves from shoots below the graft and none on the scion. It was also reported from Kansas.

RUST (Gymnosporangium globosum). Connecticut reported Sand pear as being a new host for the State.

THREAD BLIGHT (Corticium koleroga) appeared for the first time in the State of Louisiana.

CANKER (*Septobasidium retiforme*), Mississippi.

SOOTY MOLD (*Fumago vagans*) was very common in New Jersey generally following aphid injury.

STORAGE ROTS (Penicillium, Botrytis, Gloeosporium, and Cladosporium) caused 15 per cent loss in Massachusetts.

BLACK POX (*Helminthosporium papulosum*) was reported from Mississippi, where it occurred at Yazoo City. The fungus was determined by Dr. Anthony Berg.

ROOT ROT (*Armillaria mellea*) was again observed locally in Mississippi.

COLLAR ROT (Undetermined). Louisiana reported general distribution of a collar rot of undetermined cause which has been under investigation for the past three seasons.

BLACK-END, ROUGH-BARK, RUSSETTING AND STONINESS (non-parasitic), reported from Washington.

QUINCE

BLIGHT (*Bacillus amylovorus*) appeared to be unusually destructive in Massachusetts and Virginia. Its presence was also noted in Connecticut and New Jersey.

RUST (*Gymnosporangium clavipes*). Mississippi.

CROWN GALL (*Bacterium tumefaciens*). New Jersey.

LEAF SPOT (*Fabraea maculata*). One hundred per cent infection was observed in two orchards in New Jersey. Present in Connecticut.

PEACH

LEAF CURL (*Exoascus deformans*). Dry, warm weather which prevailed during early spring in most peach growing sections, limited the severity of leaf curl. It was reported from Massachusetts, Connecticut, Delaware, Maryland, Virginia, West Virginia, Kentucky, South Carolina, Mississippi, Louisiana, Arkansas, Ohio, Indiana, Illinois, Michigan, and Washington. Kansas reported that it was not observed. Arkansas stated that fruit infections were unusually common in unsprayed orchards. Not more than a trace of loss was reported generally, the highest estimate being 0.5 per cent in Massachusetts. Mississippi and Louisiana were the only States in which normal prevalence was recorded; other States reported less or much less than usual.

BROWN ROT (Sclerotinia fructicola). South Carolina reported more than usual and Mississippi and Ohio noted the usual amount. It was common in New Jersey on the few peaches that survived the cold winter. Massachusetts, Maryland, Virginia, Tennessee, Georgia, Arkansas, Illinois, Michigan, Missouri, and Colorado observed less or much less than the usual amount and Kansas stated that none was noted but there were practically no peach fruits. The blossom blight phase was very destructive locally in the vicinity of Augusta, Arkansas. The average percentage losses reported were, Tennessee, 10; South Carolina, 1 to 2; Ohio, 1; and Maryland, .5.

BACTERIAL SPOT (Bacterium pruni). Incidence of this disease was recorded in Massachusetts, Connecticut, New Jersey, Delaware, Maryland, Virginia, Georgia, Mississippi, Arkansas, Ohio, Illinois, and Kansas. The loss was negligible, 1 per cent being the greatest average loss reported.

SCAB (Cladosporium carpophilum) was more prevalent in Tennessee and South Carolina than it was in 1933 or than in an average year. The loss reported for each of these States was 5 per cent. Massachusetts reported bark infections only as there was no fruit crop. Virginia, Indiana, and Michigan reported less than the usual amount. In Arkansas, Illinois, and Kansas the disease was not observed. The low incidence was correlated with a short crop of fruit resulting from the severe winter. Scab was generally distributed in New Jersey and severe in a few localities in the southern part of the State. Delaware, Ohio, and Mississippi report about the usual prevalence.

POWDERY MILDEW (Podosphaera oxyacanthae). Several cases were observed in New Jersey.

ROOT ROT (Armillaria mellea) was reported from Mississippi.

YELLOWS, LITTLES, RED SUTURE (virus diseases). In Michigan, 568,558 trees were inspected in 18 counties. Yellows was found in 410 trees, littles in 3,671, and red suture in 224. (P. D. R. 19: 28). Yellows was reported also in New Jersey, Pennsylvania, Maryland, and Virginia. In Pennsylvania, 311 orchards with 514,279 trees were inspected in 13 counties, and 421 trees or .081 per cent were marked for yellows. K. W. Lauer of the Pennsylvania Department of Agriculture reported:

"Apparently the biennial inspection plan is working out satisfactorily since the percentage of yellows found this year is .081 per cent compared with .135 per cent found last year. In only one year was the percentage of yellows lower than this season and that was in 1930 when it was .078 per cent. The percentage this year would have been considerably lower if the owner of orchard No. 10 in Dauphin County would have removed the trees marked for yellows in 1931 and 1932. In 1932 there were 6 trees marked for yellows in the same orchard. The records also show that in both these years the owner did not remove all the marked trees. In 1933, this orchard was not inspected. This year (1934) there were 425 trees in the orchard and 168 of these were marked for yellows. The percentage of yellows is highest in Dauphin County, due of course to the condition of this orchard.

"An interesting fact which has developed is the average age increase of peach trees within the State. Beginning with the year 1923 when records of this nature were started, the average age of the Pennsylvania peach tree was 5.66 years. With the adoption of modern disease and insect control and cultural methods by the orchardist, the average age of the peach tree has been increased to 8.21 years in 1934. It is not claimed that the peach yellows inspection service is alone responsible for this average age increase but it is felt that it has contributed an important part."

ROSETTE (virus). Mississippi.

MOSAIC (virus) was discovered in May, 1934, in the Palisade district of Mesa County, Colorado. It had previously been known to occur only in Texas. Inspection of all peach orchards, or approximately 350,000 trees, in the section located 6,500 infected trees. Eradication of diseased trees was started June 20. This outbreak is recognized as a serious menace to the important peach-growing region along the Colorado River east of Grand Junction.

PHONY PEACH (virus). During 1934, the inspection of commercial and home orchards was limited to the States of Georgia, Louisiana, and Texas. In commercial orchards, 4,650,420 trees were inspected, and 98,621 infected trees were found, of which 96,072 were in Georgia, 2,183 in Louisiana, and 366 in Texas. In home orchards in the same States, 68,116 trees were inspected and 3,062 were found to be infected. Of these infected trees, 2,133 were in Georgia, 794 in Louisiana, and 135 in Texas.

During the year, 143 nurseries, and the environs thereof, were inspected in the States of Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Texas, Arkansas, Illinois, and Missouri. Two hundred and eighteen trees were found to be infected with phony peach disease. The States in which such infections were found are Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Texas, and Arkansas.

During the last half of the 1934 growing season, an intensive and extensive survey to delimit the spread of the disease was started, but up to the close of the season the survey had not resulted in the discovery of infection in States other than those where it was previously known to exist. (Bureau of Entomology and Plant Quarantine).

GUMMOSIS (Undetermined) was reported from New Jersey, Colorado, and Washington.

WINTER INJURY. Severe injury which led to nearly a complete loss of the peach crop occurred in Massachusetts, Connecticut, New York, New Jersey, West Virginia, Pennsylvania, Kentucky, and Illinois. P. D. R. 18: 35, 36, 37, and 38.

DROUGHT INJURY in the Ozark region of Missouri and Arkansas. P. D. R. 19: 2-7.

PLUM

BROWN ROT (Sclerotinia fructicola) seemed to be less prevalent in Massachusetts, Connecticut, Maryland, Ohio, Wisconsin, Minnesota, and Kansas on account of dry weather. Only one specimen was observed in Minnesota, one in Connecticut, and none in Kansas. Average percentage losses, as reported, were Tennessee, where spraying was generally neglected, 75; Massachusetts, 5; Ohio, 2; Maryland, 1. It was prevalent and severe in some cases in New Jersey and also occurred in Washington.

CROWN GALL (Bacterium tumefaciens). Maryland reported a trace and Minnesota that it was not seen.

BACTERIAL SPOT (Bacterium pruni). No appreciable damage was reported as having been caused by bacterial spot. Its incidence was recorded in Massachusetts, New Jersey, Maryland, Ohio, Mississippi, and Wisconsin. Minnesota stated it was not observed.

PLUM POCKET (Exoascus communis) was recorded in Georgia, Wisconsin, Minnesota, and North Dakota.

HYPERTROPHY (Exoascus mirabilis). Mississippi and Louisiana.

BLACK KNOT (Plowrightia morbosa). Connecticut, New Jersey, Maryland, Tennessee, and Wisconsin; was of little economic importance.

SHOT HOLE (Coccomyces prunophorae). Minnesota and Kansas.

SCAB (Cladosporium carpophilum). Wisconsin.

LITTLE PLUM (virus). Donald Cation reported that considerable trouble diagnosed as little plum occurred in the vicinity of Novi, Michigan on Burbank plum.

CHERRY

LEAF SPOT (Coccomyces hiemalis) was recorded as being less prevalent than usual in Massachusetts, Maryland, Georgia, Ohio, Indiana, Illinois, Michigan, and Kansas. Such remarks as this were made: Illinois: There is a general absence of cherry leaf spot. Kansas: Very little. Indiana: Conspicuously absent on both bearing trees and on nursery seedling stocks. Connecticut, New Jersey, Tennessee, Wisconsin, and Washington noted the presence of the disease.

BROWN ROT (Sclerotinia fructicola). Maryland, Ohio, Indiana, Michigan, Wisconsin, and Kansas report less prevalence than usual due to dry weather. Massachusetts and Connecticut report the usual prevalence with 20 per cent loss for the former. Other States reporting its incidence are New Jersey, Delaware, Virginia, and Washington.

BACTERIAL SPOT (Bacterium pruni). Iowa and New Jersey.

RUST (Tranzschelia pruni-spinosae /T. punctata/). Severe leaf infection was reported in Georgia.

LEAF CURL (Taphrina farlowii). Georgia.

ROOT ROT (Armillaria mellea). About twelve trees died near timbered areas in Michigan. Its presence was also noted in Washington.

WINTER INJURY was severe in several localities. Wisconsin: 25 per cent loss due to injury to buds in March. Kansas: Very severe, hundreds of trees died. Many lost leaves before the fruits ripened. See P. D. R. 18: 35, 36, and 119, for reports from New York and Virginia. Massachusetts, Connecticut and New Jersey also reported injury.

MULBERRY

BLIGHT (Bacterium mori) was found on seedlings from a nursery in Iowa.

CANKER (Fusarium sp.). A tree of Morus alba with a thousand or more cankers was observed in New Jersey. Fusarium sp. was found fruiting on the cankers.

GRAPE

BLACK ROT (Guignardia bidwelli) was less prevalent than in usual years in Massachusetts, New Jersey, Maryland, Arkansas, Ohio, Michigan, Wisconsin, and Kansas. The following remark from Arkansas was characteristic of the other reports: "Minor importance due to dry weather." However, black rot was reported to be more prevalent in Connecticut and Tennessee. It was not observed in Minnesota but was reported from Pennsylvania, Delaware, Georgia, and Mississippi. Average percentage losses, as reported, were Massachusetts, 8; Maryland, 5; Tennessee, 50; South Carolina, 25; Florida, 17; and Ohio, 2.

DOWNY MILDEW (Plasmopara viticola) was generally less prevalent than usual due to dry and hot weather during the months of July and August. Those States reporting less were: Massachusetts, Maryland, Florida, Arkansas, Ohio, Michigan, and Minnesota. Georgia and New Jersey reported it as being severe locally and its presence was noted in Connecticut, Delaware, and the District of Columbia. The fungus was found in abundance on the California wild grape, Vitis californica, in California, apparently for the first time since it was collected by Harkness in 1889. It has never been recorded on cultivated grape in California (P. D. R. 18: 123).

ANTHRACNOSE (Elsinoe ampelina /Sphaceloma ampelinum/) was observed in Maryland, Florida, Mississippi, Arkansas, and Minnesota, but apparently was of little importance.

BITTER ROT (Melanconium fuligineum) caused 20 per cent loss with a maximum infection of 90 per cent in one planting in Florida.

WEATHER INJURY. In Arkansas, grape diseases were largely non-parasitic. Drought injury to the vines, shelling, cracking, and uneven ripening of the bunches very materially reduced the size and quality of the crop. Hail and wind caused complete losses in some vineyards.

STRAWBERRY

LEAF SPOT (Mycosphaerella fragariae) was reported as less prevalent in Massachusetts, Ohio, Michigan, Wisconsin, and Minnesota, due to dry weather. In Louisiana there was much more than usual due to cool and very wet weather from the second week of March to the end of the third week of April. Connecticut, New Jersey, Maryland, Mississippi, North Dakota, and Washington note about the same as usual. The loss in Louisiana was estimated at 10 per cent. Other loss estimates were 5 per cent in Virginia and North Carolina, 2 in Massachusetts, Pennsylvania, Minnesota, and Oregon, 1 in Maryland and Texas, 0.1 in Ohio,and traces in Illinois, Michigan, Wisconsin, North Dakota, and Montana.

LEAF SCORCH (Diplocarpon earliana). No appreciable damage was reported as having been caused by this disease. Its incidence was recorded in Maryland, North Carolina, Florida, Louisiana, Ohio, and Wisconsin.

ANTHRACNOSE (Colletotrichum fragariae), in Florida, was the most destructive disease of plants in the nursery beds due to the girdling of young runners, and in the early set plants in the field during September and October it caused rhizome rot resulting in wilt. Spraying is not efficacious under prevailing weather conditions of Florida.

LEAF BLIGHT (Dendrophoma obscurans). Slight infection was observed in a number of fields throughout Minnesota.

POWDERY MILDEW (Sphaerotheca humuli), Washington.

BOTRYTIS FRUIT ROT (Botrytis cinerea). In Louisiana, approximately half of the berries rotted during a period of cool, wet weather the first two weeks of April. Botrytis caused probably 95 per cent of all the berry rots in the State or a total loss of 15 per cent. Its incidence was also recorded in Massachusetts, New Jersey, North Carolina, Florida, Mississippi, and Colorado. In North Carolina fruit rots due mostly to Botrytis and Rhizopus caused a loss of 8 per cent.

FRUIT ROT (Rhizoctonia sp.). Florida and Kansas.

BLACK ROOT and ROOT ROTS (undetermined) were reported generally prevalent where strawberries are grown. Wisconsin reports 25 per cent loss due to poor snow coverage. Other loss estimates were 15 in Maryland, 10 in Virginia and North Carolina, 9 in Massachusetts, 8 in Pennsylvania, 7.5 in Washington, 5 in Illinois, Montana, and Oregon, 3 in Texas, 1.5 in Florida, 1 in Michigan and Minnesota, 0.5 in Louisiana, and a trace in Colorado.

CROWN ROT (Sclerotinia sclerotiorum). There was much more in Louisiana than usual due to excessive rains and low temperature during the last two weeks of March and the first two of April.

STEM ROT (Sclerotium rolfsii) was more prevalent than usual during the fruiting season in Florida. Its presence was observed in North Carolina.

ROOT ROT (Diplodia sp.). Florida.

DWARF (Aphelenchoides fragariae) was reported from Massachusetts, North Carolina, Florida, and Louisiana.

LEAF VARIEGATION (Undetermined) was reported from Massachusetts, Maryland, Louisiana, Arkansas, and Minnesota on the Blakemore variety. (P. D. R. 18: 26, 43, 46, 98, 109).

MOSAIC (virus) was less prevalent in Wisconsin than usual. A suspected mosaic was reported from Mississippi.

WITCHES BROOM (virus?). Minnesota and New Jersey.

CRINKLE (virus). Washington and Oregon.

YELLOWS (virus). New Hampshire, Minnesota, and Washington.

SLIME MOLD (Fuligo septica). New Jersey.

WEATHER INJURY caused 85 per cent loss in Minnesota due to very dry weather both in the fall and spring and the lack of snow cover.

DISEASE COMPLEX. Oregon. The combined development of various strawberry diseases, principally Rhizoctonia and probably crinkle together with the occurrence of cyclamen mite have become so devastating in the Hood River Valley of Oregon that it is now no longer profitable to grow the Clark Seedling strawberry which for more than a quarter of a century has been the backbone of the strawberry industry in that region. The activities of these various agencies have been such that the variety no longer produces enough to compete with berries grown in other sections. (LeRoy Childs).

RASPBERRY

ANTHRACNOSE (Elsinoe veneta /Plectodiscella veneta/) was much more severe than in average years in Pennsylvania where it caused 55 per cent loss. It was reported less prevalent than usual in Connecticut, Maryland, Kentucky, Ohio, Illinois, and Wisconsin, due to dry weather. Its presence was reported in Massachusetts, New Jersey, Arkansas, and Minnesota.

LATE RUST (Pucciniastrum americanum) which was very prevalent in 1933, was scarcely observed in Massachusetts, Delaware, Illinois, and Wisconsin.

WESTERN RUST (Phragmidium rubi-idaei /P. imitans/. Washington.

ORANGE RUST (Gymnoconia peckiana) was severe locally in Pennsylvania and was reported from Maryland, Wisconsin, and Minnesota.

POWDERY MILDEW (Sphaerotheca humuli). No appreciable damage was reported as having been caused by this disease. Its incidence was recorded in Connecticut, Michigan, Minnesota, and Washington.

LEAF SPOT (Mycosphaerella rubi) was common in New Jersey; caused 50 per cent defoliation on Chief and 10 per cent on Latham in Delaware where heavy dews and rains favored its spread; combined with red spider it caused serious defoliation in Latham plantings in southern Illinois where it developed rapidly during rainy periods in August. Very little development occurred in Kansas due to the dry hot season. Valleau, commenting on this disease in Kentucky, states that, "It defoliated most old plantings of Latham in 1933 resulting in severe winter killing and low yield this year. Plantings were nearly free from leaf spot this year until after harvest when rains set in and soon defoliation became extensive. Unsprayed plantings were nearly completely defoliated by fall, whereas plantings or rows sprayed following harvest and subsequently held their foliage very well. In 1933 and 1934 the post-harvest sprays beginning immediately after harvest and continuing until about September one were the most effective."

CROWN GALL (Bacterium tumefaciens). Incidence and the amount of loss of this disease was recorded in Minnesota, 10 per cent; Pennsylvania, 5; Ohio, and Kansas, 2; Massachusetts, 1.5; Maryland, trace. It was also reported from Michigan and Wisconsin.

SPUR BLIGHT (Didymella applanata). Massachusetts, Connecticut, New Jersey, and Minnesota.

CANE BLIGHT (*Leptosphaeria coniothyrium*) caused 5 per cent loss locally in Pennsylvania. It was reported but caused no appreciable damage in Massachusetts, Maryland, Ohio, and Kansas.

WILT (*Verticillium alboatrum*). New Jersey and Ohio.

DOUBLE BLOSSOM (*Fusisporium rubi*). Maryland.

LEAF CURL (virus) was reported more or less generally prevalent in Massachusetts, Maryland, Ohio, Wisconsin, Minnesota, and North Dakota. Estimated damage, Massachusetts, 20 per cent; Ohio, 4; North Dakota and Maryland, 1.

MOSAIC (virus) was generally neither more nor less prevalent than usual. Its occurrence was reported from Connecticut, Arkansas, Ohio, Wisconsin, Minnesota, Kansas, and Washington. Those States reporting more than a trace of loss were: Ohio and Minnesota, 5 per cent, and Pennsylvania, 4. Kansas notes that nurseries are much freer of mosaic than a few years ago.

STREAK (virus) caused 2 per cent injury in Ohio.

WINTER INJURY. Minnesota reports 60 per cent loss. Plants were completely killed in many cases in the south due to drying out and freezing. In the north, snow protected the roots, but due to late rains, the canes were soft and many froze back to the snow line. Massachusetts, Kentucky, and Illinois report severe injury, Connecticut and New Jersey also reported injury, while in New York raspberries wintered in fine shape.

BLACKBERRY

RUST (*Gymnoconia peckiana*) was reported from New Jersey, Pennsylvania, Mississippi, Arkansas, Illinois, Wisconsin, Minnesota, Kansas, and Washington as of minor importance except in Illinois where it was considered an outstanding disease on the cultivated plantations.

LEAF SPOT (*Mycosphaerella rubi*) occurred sparingly in Connecticut, New Jersey, and Kansas.

BLOTCH (*Cercospora rubi*). Louisiana.

DOUBLE BLOSSOM (*Fusisporium rubi*). New Jersey, not of great importance due to the fact that Black Diamond variety was largely destroyed by winter injury.

ROSETTE (Cercosporella sp.). Louisiana.

GRAY MOLD (Botrytis cinerea) was severe on certain plants in New Jersey and was also reported from Washington.

CROWN GALL (Bacterium tumefaciens). Wisconsin and Washington.

MUSHROOM ROOT-ROT (Armillaria mellea). Washington.

MOSAIC (virus). New Jersey.

STREAK (virus). Pennsylvania.

DEWBERRY

ANTHRACNOSE (Elsinoe veneta /Plectodiscella veneta/) was very serious in some plantings in New Jersey. RUSTS (Gymnoconia peckiana and Kuehneola uredinis) were reported from New Jersey; CANE BLIGHT (Leptosphaeria coniothyrium) from Louisiana; LEAF SPOT (Mycosphaerella rubi) from Mississippi; DOUBLE BLOSSOM (Fusisporium rubi) from New Jersey.

CURRANT

ANTHRACNOSE (Pseudopeziza ribis) caused 100 per cent defoliation in one field in New Jersey, although the loss to the State was little. Its presence was also reported from Wisconsin and Washington.

GOOSEBERRY

ANTHRACNOSE (Pseudopeziza ribis). Illinois and Wisconsin report much less than usually. It was very abundant where prevalent in New Jersey and was also reported from Washington.

RUST (Puccinia caricis) was reported generally from Connecticut, New Jersey, and Wisconsin, but caused little damage.

LEAF SPOT (Mycosphaerella grossulariae) was reported from Kansas and Wisconsin as being less prevalent than usual.

POWDERY MILDEW (Sphaerotheca mors-uvae). Wisconsin and Washington.

CRANBERRY

FALSE BLOSSOM (virus) was found on a number of bogs in the Annapolis Valley of Nova Scotia, for the first time.

STORAGE ROTS. The following summaries were furnished by members of the Division of Fruit and Vegetable Crops and Diseases.

Massachusetts: The total spoilage due to fungous rots was less in 1934 than in 1933. *Glomerella cingulata vaccinii* was the most important fungus causing spoilage. *Godronia cassandrae* (end rot) was usually second in importance. *Sporonema oxycocci* and Phomopsis were important causes of spoilage on some bogs, in some instances causing a loss equal to or exceeding that due to Godronia. *Acanthorhynchus vaccinii* and *Guignardia vaccinii* were negligible. (H. J. Bergman)

Wisconsin: The Wisconsin cranberry crop of 1934 was of the poorest keeping quality in a 5-year period, judging from the results of consecutive keeping experiments with berries from several widely scattered marshes. The end-rot, *Godronia cassandrae*, annually causes the major part of cranberry storage loss in Wisconsin. These figures, applying to dry-raked and water-raked samples from the same marshes, cannot of course be accepted as representing the actual storage loss in the State, but since the samples for the most part came from the same marshes year after year, they do furnish an index to the relative keeping quality on representative marshes during these years. They were:

Percentage of Rot in Samples December 20

	Dry Raked	Water Raked
1934	24%	40%
1933	13	25
1932	12	28
1931	15	26
1930	13	21

The actual loss sustained by growers was not at all comparable to the indicated keeping quality of the fruit. Due to an extremely short crop in the industry as a whole, berries moved early and rapidly, both in distribution and consumption, with the result that most of the Wisconsin crop was consumed before serious storage loss had developed. (H. F. Bain)

BLUEBERRY

BITTER ROT (*Glomerella cingulata vaccinii*), New Jersey.
TWIG DIE-BACK (*Botrytis* sp.)? Washington.

CITRUS

STEM-END ROT, MELANOSE AND SHELL BARK. (Diaporthe citri /Phomopsis citri, P. californica/). In Florida, regular and heavy rains during the spring produced a very severe degree of fruit blemish. The loss on grapefruit was estimated at 14 per cent from melanose and 10 per cent from stem-end rot. On oranges, the loss from melanose was 12 per cent while stem-end rot caused 8 per cent loss. Melanose on orange was reported from Louisiana and on grapefruit from Mississippi. Shell bark was noted on lemon in California.

CITRUS SCAB (Sphaceloma fawcettii) was reported to be more prevalent in Florida on tangerines, lemons, limes, grapefruit, tangelos, and King oranges than during a usual year. It was also reported on Satsuma oranges from Louisiana.

BLAST (Bacterium syringae /B. citriputeale/) occurred in northern California.

LEAF SPOT (Phyllosticta sp.) on lemon was reported from New Jersey.

BROWN ROT GUMMOSIS (Phytophthora citrophthora) was reported from California.

MUSHROOM ROOT ROT (Armillaria mellea). All varieties of citrus are susceptible in California.

MOTTLE LEAF (Malnutrition). General in nearly all districts of California. A spray of zinc sulphate and lime is proving a remarkable corrective.

PSOROSIS (virus)? California.

GRANULATION (cause unknown). California reports a physiological trouble on Valencia oranges, which causes a hardening of the juice sacs at the stem end of the fruit.

BANANA

PANAMA DISEASE (Fusarium cubense) appeared to be more abundant in Puerto Rico than usual. ANTHRACNOSE (Gloeosporium musarum) was common and widespread in Puerto Rico. FRUIT FRECKLE (cause unknown) was common on the Manzana variety in Puerto Rico. Cercospora musarum was isolated from the lesions.

FIG

THREAD BLIGHT (Corticium koleroga) was very destructive in southwest Louisiana and was also reported from Florida. LIMB BLIGHT (Corticium salmonicolor), Florida. TWIG BLIGHT (Stilbum cinnabarinum), Louisiana. RUST (Physopella fici), Louisiana. ANTHRACNOSE (Glomerella cingulata), Mississippi.

PERSIAN WALNUT

BACTERIAL BLIGHT (Bacterium juglandis) was less prevalent than usual or than last year in Oregon. Moisture conditions were only moderately favorable to the disease except in certain localities. Timely spraying with Bordeaux 3-3-50 reduced the incidence of blight on the nuts to a negligible quantity. The loss for the State was estimated at 20 per cent reduction in yield and 5 per cent loss in grade. It was also reported from Washington. (P.D.R. 18: 137).

LEAF SPOT (Ascochyta juglandis) occurred in a planting in Oregon, but did not cause any damage.

DOWNY LEAF SPOT (Microstroma brachysporum) occurred in Oregon.

BLUE MOLD (Penicillium sp.) was reported from Washington.

FRECKLE SPOT of the leaves, of unknown cause, but apparently non-parasitic in origin, was reported from Oregon. (P. D. R. 18: 174).

LEAF AND TWIG BLIGHT, due possibly to drought, was reported from Yakima County, Washington.

ROSETTE, cause unknown, perhaps due to zinc deficiency, occurred in Mississippi.

JAPANESE WALNUT

BACTERIAL BLIGHT (Bacterium juglandis) caused 75 per cent loss of the crop on twenty bearing Japanese walnut trees (Juglans sieboldiana) in the horticultural orchard at Athens, Georgia.

PECAN

SCAB (Cladosporium effusum) was more injurious to Schley pecans in Georgia than it had been for a period of at least eight years. Mississippi and Louisiana also report scab as being severe.

POWDERY MILDEW (Microsphaera alni) and BROWN LEAF SPOT (Cercospora fusca) were reported from Mississippi. DIE BACK (Botryosphaeria berengeriana) occurred in Louisiana.

FILBERT

BACTERIAL BLIGHT (Bacterium sp.) was much more prevalent in Washington and Oregon than for some years past, due to considerable rain early in the spring when the host tissue was most susceptible to attack. Many young trees from two to four years old were killed by bacterial blight. In one Oregon orchard about 10 per cent of the trees died. In older trees the disease caused death of buds and young twigs in the tops of the trees instead of girdling the trunks as is usually the case with younger trees. Bacterial blight seemed to be more prevalent on trees previously weakened from some adverse condition such as winter injury or drought. The disease was found on the Turkish filbert, Corylus colurna, in Lewis County, Washington, in most instances confined to the current year's growth, with only very limited spread in one-year-old branches. Larger branches and trunks of the Turkish filbert seem to be very resistant. A bacterial organism apparently identical with the filbert blight pathogen was isolated from a twig blight of the native wild hazel, Corylus californica, in one locality in Oregon. (P.D.R. 18: 117, 155).

POWDERY MILDEW (Phyllactinia corylea) was more prevalent than usual in Oregon, but was not of any particular consequence due probably to the lateness of the attack. It was also reported from Washington. It occurred on native wild hazel in Oregon. (P.D.R. 18: 137, 156).

LEAF SPOT (Gloeosporium coryli) was found on the native wild hazel in Oregon in 1933. It has not been noted on the cultivated filbert in Oregon although it has been reported on this host in Europe. (P. D. R. 18: 191).

MUSHROOM ROOT ROT (Armillaria mellea) caused death of a number of trees in a planting in Oregon in 1933, and other trees were badly infected. (P. D. R. 18: 4).

BROWN-STAIN (non-par.) of the nuts was much less prevalent than usual in Oregon.

COCONUT

BUD ROT (Phytophthora palmivora) appeared to be much more abundant than in 1933 in Puerto Rico. A very definite case of STEM DISEASE (Thielaviopsis paradoxa) occurred near Cabo Rojo in the western part of Puerto Rico.

DISEASES OF VEGETABLE CROPS

POTATO

LATE BLIGHT (*Phytophthora infestans*). Appreciable loss from potato late blight was reported only in Atlantic Coast States from Maryland north, and in Florida. In the northern States, dry weather prevented infection early in the year and most of the loss was due to tuber rot following late rains. In Florida, reduction in yield was more important, amounting to 6 of the 8 per cent total loss reported. Other loss estimates were 4 per cent in Massachusetts, 3 in New York and Maryland, 2 in Pennsylvania, 1 in Maine, and traces in West Virginia, North Carolina, Texas, Ohio, and Washington. New Hampshire, Connecticut, New Jersey, Wyoming, and Oregon also reported the disease. In Wyoming it occurred in irrigated fields; in Oregon only in the western section. States in which loss sometimes occurs but which reported no loss in 1934 are Virginia, Tennessee, South Carolina, Louisiana, Michigan, Wisconsin, and Minnesota.

EARLY BLIGHT (*Alternaria solani*) was generally reported but was not very important in most cases. In Michigan it was prevalent after the beginning of September and caused most damage in fields planted late or irrigated throughout the season. It occurred in irrigated fields in Wyoming. In one field in Columbia County, Oregon, practically all of the plants showed serious infection. Losses estimated were 25 per cent in Tennessee; 2 in Massachusetts and Ohio; 1 to 2, South Carolina; 1, North Carolina, Georgia; 0.5, Maryland, Florida, Louisiana, Texas, Michigan; and traces in New York, Pennsylvania, Delaware, Virginia, West Virginia, Minnesota, North Dakota, Montana, Wyoming, and Washington.

SCAB (*Actinomyces scabies*) was favored by hot dry weather and occurred in the usual amounts or more in practically every State reporting it. Loss estimates include 10 per cent in Iowa, 8 in Texas, 5 in Michigan and Wisconsin, 3 in New York and Maryland, 2 in Maine, Virginia, Minnesota, and Montana, 1 in Massachusetts, Kansas, Wyoming, and Colorado, 0.5 in Pennsylvania, Florida, and Ohio, and traces in Delaware, West Virginia, North Dakota, and Washington. In Michigan, tubers set after rains began in the fall were practically free of scab. In Minnesota the disease was especially bad on some peat soils.

BLACKLEG (*Bacillus phytophthorus*). Losses reported as due to blackleg are 8 per cent in Georgia, 2 in West Virginia and Michigan, 1 in Maine, New Hampshire, Virginia, North Carolina, and North Dakota, 0.5 in Florida, 0.2 in Ohio, and traces in Massachusetts, New York, Pennsylvania, Maryland, South Carolina, Louisiana, Minnesota, Kansas, Montana, Wyoming, and Oregon. The disease was very prevalent on Irish Cobbler in Maine. Sixty-two per cent of the fields examined showed blackleg in amounts varying from 1 to 20 per cent. In West Virginia it was especially severe on Irish Cobbler in one field where it appeared in midseason and spread rapidly. This field was in corn last year. From 2 to 15 per cent occurred in most fields in Lumpkin, Union, and Rabun Counties, Georgia, but fifty per cent infection was observed in one field in Rabun County.

STEM ROT (Corticium vagum) was reported rather generally in about the usual amounts, although in Massachusetts, South Carolina, Iowa, Kansas, and Oregon, there was said to be less and in North Dakota much more than usual. Rhizoctonia injury was very prevalent in Maine in 1933 and 1934. Practically every field was affected and the stand was reduced by as much as 20 per cent in some cases. In Florida, where this is one of the most important diseases of potato, as much as 50 per cent infection was observed. Warm, dry soils in the spring reduced the amount of infection in Iowa. Similar statements were made in reports from some of the other States where there was less than usual. In Ohio most of the injury from this disease occurs on early potatoes grown in muck soils. In Michigan, early planted and late planted potatoes are most severely affected. Seed treatment and shallow covering at planting are not practiced as much as they should be in Massachusetts, according to Boyd. On the other hand, Dykstra reported that the number of farmers treating potatoes for the control of tuber-borne diseases is increasing in Oregon. Losses reported are 5 to 10 per cent in Maine, 7 in Massachusetts, 6 in West Virginia, 5 in New York, Maryland, Georgia, Florida, Kansas, and Montana, 4 in Minnesota, 3 in Pennsylvania, South Carolina, and Iowa, 2 to 3 in Colorado, 2 in North Carolina, Ohio, Texas, and Wyoming, 1 in Michigan and Louisiana, 0.6 in North Dakota, and traces in Delaware, Virginia, Wisconsin, and Washington.

WILT (Fusarium spp. usually reported as F. oxysporum). Hot, dry weather favored the development of Fusarium wilt and more or much more than usual was reported from Maryland, Ohio, Minnesota, North Dakota, and Wyoming. In no case was less than the average reported. It is likely that, as was reported to be the case in Minnesota, the prevalence of heat and drought injury made an accurate estimate of the loss from wilt alone difficult. Sixty per cent infection was observed in two fields grown from New York seed in Ohio. In North Dakota the disease was unusually severe in the Red River Valley. Fusarium eumartii was general in dry land potatoes in Wyoming. Much of the trouble formerly diagnosed as Fusarium wilt in Wisconsin is probably yellow dwarf, according to R. E. Vaughan. Losses reported are 6 per cent in Maryland, 4 in Minnesota, 3 to 4 in Colorado, 3 in West Virginia and Wyoming, 2 in Pennsylvania and Montana, 1.6 in Michigan, 1.5 in Ohio and North Dakota, 1 in Texas, traces in Massachusetts, New York, Virginia, Tennessee, North Carolina, Florida, Kansas, and Washington, and no loss in Maine, South Carolina, and Wisconsin.

TUBER ROTS (Fusarium spp.). Soft rot was prevalent before digging in fields near Athens, Monroe, and Augusta, Georgia. Five to 10 per cent of dry rot was found in a carload of Georgia grown Irish Cobblers examined at Athens in December Dry rot was reported as general in New Jersey. In Wyoming it caused a loss of 5 per cent to potatoes in storage. Stem-end rot caused by Fusarium eumartii was reported from Michigan.

WILT (Verticillium alboatrum) occurred in southern Michigan.

BACTERIAL WILT (Bacterium solanacearum) is an important disease in the Hastings section of Florida. A loss of 3 per cent was estimated in 1934. The varieties Green Mountain and Bliss Triumph are said to be resistant, while Spaulding Rose and Chippewa are very susceptible.

STEM ROT (Sclerotium rolfsii) was reported from Florida, Mississippi, Louisiana, and Arkansas. A loss of 0.5 per cent was reported in Florida. In Arkansas a considerable amount of tuber rot in the field seems to be associated with this organism.

STEM ROT (Sclerotinia sclerotiorum) caused a loss of 0.5 per cent in Florida.

GRAY-MOLD ROT (Botrytis, cinerea type), of tubers, Maine.

NEMATODES. Potatoes from Harrisonburg, Virginia, heavily infested with Anguillulina pratensis (Tylenchus penetrans), were sent to Dr. G. Steiner by S. A. Wingard, who stated that the grower had 1300 bushels in the same condition. A. pratensis was reported from Mississippi also. The root-knot nematode, Heterodera marioni, was reported from Washington.

VIRUS DISEASES were reported in about the usual amounts. In many cases symptoms were said to be masked due to hot weather. The use of control measures has reduced the amount of most virus diseases considerably in most States. Losses from virus diseases in general were reported as 5 to 10 per cent in Washington, 5 in Minnesota and Montana, 3 in Louisiana, 1 in Florida, and 0.5 in Delaware.

LEAF ROLL caused losses estimated at 10 per cent in Pennsylvania, 5 in Massachusetts, West Virginia, and Ohio, 3 in New York and North Carolina, 2 in Maryland, and Virginia, 1 to 2 in

Maine, 1 in Michigan and North Dakota, and traces in Montana and Colorado.

MOSAIC. Losses due to mosaic were estimated at 5 per cent in Massachusetts, 4 in West Virginia, 3 in Pennsylvania and Georgia, 2 in Maine, New York, Maryland, Virginia, North Carolina, and Wyoming, 0.5 in Michigan, and traces in South Carolina, Texas and Wisconsin. MILD MOSAIC was reported specifically from Georgia, Arkansas, Michigan, North Dakota, Montana, and Oregon. An increase in amount noted in Oregon was attributed to the practice of using large potatoes for table stock, and single drops for seed, as tubers from diseased hills are apt to be smaller. CRINKLE MOSAIC was reported from Wisconsin, and Montana, and RUGOSE MOSAIC from Georgia, Michigan, Wisconsin, Washington, and Oregon.

SPINDLE TUBER caused losses estimated at 2 per cent in Kansas, 0.5 in Maryland, and a trace in New York, and the disease was reported also from Georgia, Montana, and Wyoming. In New York "It is seldom seen, but occasional fields show high percentages due to the persistent use of the same seed."

YELLOW DWARF. Losses from yellow dwarf were reported as 2 per cent in New York and Michigan, 1 per cent in Ohio and Wisconsin, and a trace in Maryland. "In the severely affected area in western New York losses of 10 per cent are not uncommon. Outside of this area the occurrence of yellow dwarf is scattered and new infections are not often observed," according to K. H. Fernow. A. L. Pierstorff reported from Ohio "The percentage of yellow dwarf is dependent upon the amount in the seed. One per cent in a Michigan field showed 20 per cent in Ohio the following year." "Yellow dwarf was more severe in the northern counties and the Upper Peninsula" of Michigan according to J. H. Muncie, "than in 1933, particularly in Grand Traverse, Leelanau, and Benzie Counties. The clover and potato leaf hoppers were abundant this year." In Wisconsin, on the other hand, R. E. Vaughan reported that the loss was not so heavy as in 1933. "The weather conditions were a factor, also the introduction of improved strains into affected areas."

CURLY DWARF was reported from Georgia, GIANT HILL from Michigan and Oregon, WITCHES' BROOM from Oregon and Montana, and CALICO from Oregon.

TIPBURN AND HOPPERBURN (non-parasitic and leafhoppers) caused losses estimated at 15 per cent in Arkansas, 10 in New York, 8 in Massachusetts, Ohio, and Minnesota, 7 in West Virginia, 5 in Georgia, and Michigan, 3 in Pennsylvania, and Virginia, 2 in North Carolina, 0.5 in Maryland and Texas, 0.2 in North Dakota, and traces in Wisconsin and Montana.

PSYLLID YELLOWS (due to injury caused by the potato psyllid) caused severe damage to irrigated potatoes in Wyoming. The loss was estimated at 35 per cent.

UNDETERMINED. "Z" DISEASE occurred in western New York where it caused a loss of 0.5 per cent. K. H. Fernow reported "It was first observed in July, 1933 in seed from Michigan, and was also found that year in many other fields. Symptoms: Upper leaflets turn yellow, then black, rot at foot of stem, later the plant dies. Large, brown, necrotic spots occur in pith of stem, especially at the nodes (larger than in yellow dwarf). Tubers show a brown or black ring, sometimes there is hydrosis in the ring, sometimes browning in the medullary area near the stolon. Sometimes there is rot at the stem end, and occasionally a hollow tuber, also occasionally brown spots in tubers as in yellow dwarf. The disease has been reported from Ohio in New York seed but also in seed from other sources, by Tilford. The symptoms resemble those caused by Fusarium eumartii in some respects; also, in some respects, those of ring disease of Europe."

"BRONZED WILT" was reported from West Virginia, where it has appeared for two years and is rapidly increasing, according to C. R. Orton. The plants wilt and become bronzed. Internal necrosis is prominent. A Fusarium is associated but is probably secondary. A loss of 25 per cent was estimated. The disease is especially severe in Rurals.

"HAYWIRE" caused a loss of 2 per cent in Louisiana. "MORON" was reported from Michigan. LEAK was observed in New Hampshire for the first time.

BREAKDOWN (drought injury) caused 5 per cent loss in Michigan. It was most severe in light soils in the southern part of the State. INTERNAL BROWN SPOT and NET NECROSIS, due to soil deficiency, and TUBERS WITHOUT TOPS, due to nutritional disturbance, were reported from Washington. SUN SCALD caused by high temperatures at digging time was less important than usual in Wisconsin, due to cooler weather at harvest.

TOMATO

LEAF SPOT (Septoria lycopersici) was reported generally as unimportant, except in Georgia and Pennsylvania where the loss was estimated at 10 and 5 per cent, respectively. No other State reported more than 2 per cent loss.

WILT (Fusarium lycopersici). Hot, dry weather favored the development of wilt in Kentucky, Ohio, Indiana, Michigan, Wisconsin, and Minnesota where there was more than usual. In practically all of the other States reporting there was the average amount. F. L. Wellman reported that it was present in the Manatee County area of Florida but was less important than in some previous years. This seems to be due to two factors, - first, the use of the resistant Marglobe tomato, and second, the relative coolness of the season. Under Florida conditions in the spring of 1934, the Marglobe tomato did not bear as heavily as healthy fields of the Globe variety, and considerable comment has been made about the matter. Many of the best growers were talking about using Globe another season, since so many farmers had such good luck with this variety in small patches over the Manatee County district. In Indiana, according to R. W. Samson, the disease is becoming more widespread, and occurs further north each year. In Wisconsin, wilt occurs mostly in greenhouses. In Minnesota it was found in one home garden on light sandy soil, the second time it has ever been reported from outdoors in that State. Fusarium wilt is less prevalent in Utah than the Verticillium wilt, according to the results of a survey conducted in 1934 (P.D.R. XIX: 108).

WILT (Verticillium alboatrum) was reported only from New York and Utah. One field in Nassau County, New York, showed 100 per cent infection; elsewhere in the State damage was very slight. Verticillium wilt is very prevalent in Utah tomato growing sections. Together with Fusarium wilt it is responsible for the wilting of the large basal and central leaves with consequent sun scald of fruit and causes heavy losses. Wilting and sun scald together caused a loss estimated at 8.5 per cent (P.D.R. XIX: 108).

EARLY BLIGHT (Alternaria solani), although it was generally reported as appearing late, was rather more prevalent than usual in a number of States, including Massachusetts, Maryland, Florida, Ohio, and Indiana. In Massachusetts it was said to be unusually destructive in August although the weather was dry. It was thought that heavy dews at night favored infection of the plants weakened by drought in July and August. In Maryland the disease was severe during September, when the rainfall in 1934 was the highest on record for that month. During May, early blight was more widespread and destructive in south-central Louisiana than for several years. A late warm fall and occasional showers permitted the development of a considerable amount of fruit rot in the canning tomato area of Ohio. Early blight was the principal disease of tomatoes in southern Indiana where it appeared late. Frequent light showers favored its spread there also. A loss of 8 per cent was recorded in Massachusetts, 5 in Maryland, and 3 in Pennsylvania and Florida. Other losses reported did not exceed 2 per cent. Collar rot was reported from New Jersey, Maryland, North Carolina, and Indiana. In Indiana, its occurrence was scattered and was traceable to definite infected lots of plants from parts of the South receiving heavy rains during the growing season. Several severe outbreaks in one canning factory acreage necessitated a considerable amount of replacement. In New Jersey it caused serious losses in only a few fields. It was severe on a few lots of plants from Georgia.

LATE BLIGHT (Phytophthora infestans) appeared later and was less prevalent than for the last two years in New England States although there was still more than usual. The loss was much less than last year. In Massachusetts, the reduction in yield was estimated at 3 per cent and the loss from fruit rot also at 3 per cent. In up-State New York it caused only a trace of damage, but in the Hudson Valley and on Long Island the loss was 2 to 3 per cent. Almost complete loss occurred in some fields in Westchester and Nassau Counties. A trace of loss was reported from Pennsylvania, where the disease occurred in the Pittsburgh area. The greatest infection observed was 40 per cent.

BUCKEYE ROT (Phytophthora terrestris) was reported from New York, Maryland, Tennessee, and Louisiana. In New York it has so far been found only at Irondequoit and Ithaca, in greenhouses first, then outdoors. In Tennessee it caused much injury in Bedford County, where it was probably favored by rainy weather.

BACTERIAL CANKER (Aplanobacter michiganense) was reported from Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Mississippi, Indiana, Illinois, Michigan, Wisconsin, Colorado, and Washington. In most States its occurrence was local or scattered. The only States reporting losses of consequence were Pennsylvania with 5 per cent, and Illinois, where bacterial canker and virus diseases caused 16 per cent loss. In Michigan the disease had not been reported for six years, but in September of 1934 it was observed in three southern counties.

BACTERIAL SPOT (Bacterium vesicatorium) more than usual was reported from Delaware, Maryland, and Virginia. In Mississippi there was the normal amount. The leaf spot phase of the disease was more prevalent and serious than usual in Maryland. In eastern Virginia the very abundant rainfall during June and July was favorable for the development of the disease. A loss of 4 per cent was estimated in Virginia and 0.5 per cent in Maryland.

BLOSSOM-END ROT (non-par.) caused more loss than usual in most States reporting it, due to dry, hot weather either throughout the growing season or following wet weather earlier in the year. In New York blossom-end rot has been serious every year since 1931 because of hot dry summers. It was observed to be especially bad in ridged fields in the western part of the State. There was said to be less than usual in Maryland due to a steady supply of moisture during harvesting. Losses of more than 1 per cent reported include

15 per cent in Texas, 8 in Pennsylvania, 5 in South Carolina, Ohio, and Minnesota, 3 to 4 in New York, and 3 in Massachusetts and West Virginia.

FRUIT ROTS caused much more loss in Maryland than usual due to heavy rainfall during harvesting. The loss from all fruit rots was estimated at 20 per cent in that State. Gray mold fruit rot (Botrytis cinerea) was less prevalent than usual in greenhouses in Monroe County, New York due to cold weather and low humidity during the winter. Ripe rot (Phoma destructiva) occurred following sun scald in New York. There was more than usual in Florida where the loss was estimated at 5 per cent. Timber rot (Sclerotinia sclerotiorum) occurred in greenhouses in New York and Kansas. In one lot of tomatoes observed in a market in Atlanta, Georgia, in October, 20 per cent showed lesions of yeast rot (Nematospora lycopersici).

VIRUS DISEASES. MOSAIC was reported from Massachusetts, Connecticut, New York, New Jersey, Delaware, Maryland, Louisiana, Ohio, Wisconsin, Kansas, and Washington mostly as less prevalent than usual. Massachusetts, New York, and Delaware report it as more destructive in greenhouses than in the field. F. L. Wellman reported from Florida that "The usual large amount of tomato mosaic was present this year, and the writer believes that practically no large planting of the crop was free from its presence at the close of the season. The occurrence of the disease seems to be more and more closely correlated with handling of the vines by colored help using tobacco in the form of snuff, chewing tobacco, and cigars. About 90 per cent of the plants in most fields were infected, but losses due to this infection were hard to estimate. In some cases it was possibly 10 per cent of the crop, in others less than 1 per cent loss occurred." Loss estimates reported are 3 per cent in Massachusetts, 0.5 in Maryland and Ohio, and a trace in New York. FERN-LEAF occurred in New Jersey and Washington. STREAK was reported from New York, Ohio, Wisconsin, and Washington. SPOTTED WILT was observed for the first time in Oregon and Washington. A disease reported by R. W. Samson as RINGSPOT and said to be due to a virus appeared in epidemic proportions in southern Indiana causing dieback of the shoots, necrotic ringspotting of the leaves, and conspicuous ringspot of the fruits. CURLY-TOP (western yellow blight) was exceedingly destructive in the Pacific Northwest, Idaho, and Utah. Losses reported are 30 per cent in Utah, 45 to 90 per cent in Washington, 25 per cent in Oregon, and traces in Montana and Colorado. Accounts of its occurrence in Utah, Idaho, Washington, and Oregon are given in the Reporter, 18: 110, 131, 168, 173. (See sugar beet).

OTHER DISEASES. COLLAR ROT (Fusarium sp.), Georgia. STEM ROT (Pythium sp.), Louisiana. STEM ROT (Sclerotium rolfsii) was reported from North Carolina and Georgia. In each State it caused heavy loss in one field. LEAF MOLD (Cladosporium fulvum) was reported from Connecticut, New York, New Jersey, Mississippi, Wisconsin, and Washington. In New York the loss in greenhouses was estimated at 3 to 4 per cent. ANTHRACNOSE (Colletotrichum phomoides), New York, New Jersey, Maryland, Indiana, and Michigan. GRAY SPOT (Stemphylium solani), 1 per cent loss in Florida. ROOT-KNOT (Heterodera marioni) was reported from New Jersey, South Carolina, Georgia, Mississippi, Ohio, Wisconsin, and Kansas. In Ohio a loss of 2 per cent was estimated by A. L. Pierstorff who said that most of the greenhouses and an increasing amount of the muck land in the State are becoming infested. Three per cent loss occurred in South Carolina.

NON-PARASITIC. Sunscald was very important in Utah (see Verticillium wilt). It was reported from New York, New Jersey, Maryland, and Washington also. In Kansas, due to hot weather, the fruit did not set, and the tomatoes were almost a total failure. In Arkansas, the crop was reduced to practically nothing, but the local supply, by drought. The loss was estimated at 80 per cent. Heavy loss was caused by drought in other States also. OEDEMA was observed in a Massachusetts greenhouse on some crosses of Lycopersicum pimpinellifolium x L. esculentum. BLOTCHY RIPENING was reported from Washington.

BEAN

A report on the occurrence of bean and pea diseases in some of the western States in 1934, by L. L. Harter and W. J. Zaumeyer, was published in the Plant Disease Reporter 19: 142-144, June 15, 1935.

BACTERIAL BLIGHTS (Bacterium spp.) were widely distributed. Losses reported were 6 per cent in Louisiana, 5 in Florida, Texas, and Michigan, 3 to 5 in New York, 4 in West Virginia and Illinois, 3 in Ohio, 2 to 3 in Colorado, 2 in Massachusetts and Pennsylvania, 1.5 in Maryland, 1 in Virginia, North and South Carolina, Minnesota, and Wyoming, and a trace in Wisconsin, North Dakota, Montana, and Washington. The common bacterial blight (Bacterium phaseoli) was most often reported, and was said to be most prevalent in Maryland and Louisiana. Halo blight (B. medicaginis phaseolicola) was responsible for practically all of the loss due to bacterial blights in New York. The common blight was said to be generally distributed in that State, and bacterial wilt (B. flaccumfaciens) and blight due to B. vignae (= B. syringae) occurred in scattered localities, but each caused only a trace of loss. Halo blight was also reported specifically from Massachusetts, Louisiana, and Montana.

ANTHRACNOSE (Colletotrichum lindemuthianum) was not very important due to the use of western-grown seed and of resistant varieties, and to dry weather. Five per cent loss was reported from Pennsylvania, 3 per cent in West Virginia, and Georgia, and 2.5 per cent in Colorado. In other States reporting the loss did not exceed 1 per cent.

RUST (Uromyces phaseoli typica /U. appendiculatus/) occurred rather generally but caused little or no loss except in Georgia, where 5 per cent was estimated.

ROOT AND STEM ROTS were reported as causing losses as follows: 7 per cent in North Carolina, 6 in Pennsylvania, 5 in South Carolina and Georgia, 4 in Florida, 3 in West Virginia, 2.5 in Maryland, 2 in Massachusetts, Louisiana, Texas, and Colorado, 1 in Montana, and traces in New York, Minnesota, and Wyoming. Corticium vagum occurred in New York, New Jersey, Georgia, Florida, Louisiana, Michigan, and Washington. Root rot due to Fusarium sp. was reported from Maryland, Virginia, and South Carolina, and dry root rot caused by F. martii phaseoli from Mississippi. Sclerotinia sclerotiorum was less important than usual in New York and was also reported from Texas. Sclerotium rolfsii was reported from Mississippi, Louisiana, and Puerto Rico.

MOSAIC (virus). Losses attributed to bean mosaic in 1934 were considerably less than for the past few years in most of the States reporting. In Illinois 10 per cent loss was estimated, in Colorado 5 per cent on dry beans and 2 on snap beans, in Montana 4, in Massachusetts and Idaho 3, in North Carolina, Minnesota, Texas, North Dakota and Wyoming 2, in West Virginia, South Carolina, and Wisconsin 1, in Pennsylvania, Maryland, and Ohio 0.5, and in New York, Florida, and Michigan, traces. In New York infection of Stringless Green Pod Refugee ranged from 95 to 100 per cent, with a consequent reduction in yield of 15 per cent. Exposed fields suffered less severely than sheltered fields. Mosaic was prevalent on Stringless Refugee in Michigan also and the variety was reported as very susceptible in Maryland. Resistant varieties such as Burpee's Giant, Asgrow, and Full Measure, are generally used in Maryland. The Robust variety mostly grown for field beans in Michigan is very resistant.

CURLY-TOP (virus). A severe outbreak occurred in 1934 in the Pacific Northwest and other regions where curly-top occurs. (P.D.R. 18: 168, 173). A loss of 10 to 20 per cent was estimated in Washington.

OTHER DISEASES. GRAY MOLD ROT (Botrytis cinerea), New York, rare. LEAF SPOT (Cercospora cruenta) was serious on snap beans near Eastman, Georgia. POWDERY MILDEW (Erysiphe polygoni) occurred in the fall crop in Virginia, during the cooler part of the season in Florida, and was rather common locally in Louisiana. Little damage was caused. ROOT KNOT (Heterodera marioni) was present in Florida, Mississippi, and Arkansas. CHLOROSIS was common in several parts of New Jersey. YELLOWING due to magnesium deficiency was common on beans and other vegetables in Florida. It is generally controlled by spraying with magnesium sulfate. SPRAY BURN was reported from New Jersey. Dust injury due to arsenate of lead was bad on one farm in Connecticut. SUNSCALD was reported from New Jersey.

LIMA BEAN

POD BLIGHT (Diaporthe phaseolorum) was said to be very severe in some plantings in New Jersey and was reported in Connecticut and Maryland. ANTHRACNOSE (Colletotrichum lindemuthianum) caused 2 per cent loss in Ohio. ANTHRACNOSE (C. truncatum) was reported from Mississippi. BACTERIAL BLIGHT (Bacterium phaseoli) was the cause of rot of Fordhook lima beans grown in southern Georgia. In one lot observed in the Athens market, 50 per cent were affected. BACTERIAL LEAF SPOT (B. vignae = B. syringae) was reported from Connecticut and Maryland. DOWNY MILDEW (Phytophthora phaseoli): One hundred per cent infection was observed in two large plantings in New Jersey. A loss of 1 per cent was reported from Maryland and 0.1 per cent from Ohio. SCAB (Elsinoe phaseoli) was less abundant in Puerto Rico than in 1933. ROOT ROTS, due to Fusarium spp. and other organisms, caused a loss of 1.5 per cent in Maryland. OEDEMA (non-par.) was reported from Pennsylvania.

SWEET POTATO

BLACK ROT (Ceratostomella fimbriata). Most of the eastern sweet potato growing States reported the usual amount of black rot. In Tennessee, Indiana, Iowa, and Kansas there was less, due to hot dry weather, In Iowa, according to J. J. Wilson, black rot has become a less serious factor because of seed treatment and hot bed sanitation. Two per cent in Iowa was the highest reduction in yield reported. The disease was reported once in Connecticut which is outside the sweet potato growing area.

WILT, STEM ROT (Fusarium batatatis and F. hyperoxysporum). The hot dry weather that reduced the amount of black rot in Tennessee, Indiana, Iowa, and Kansas, favored the development of stem rot in those States and heavy losses resulted. In Indiana, "It was the most conspicuous disease of sweet potatoes. Growers who usually get yields of 200 to 250 bushels per acre, in 1934 obtained yields ranging from 50 to 75 bushels," according to J. A. McClintock. In Kansas, O. H. Elmer reported that "Plants were more generally affected than ever before. In inspections for certification, very few fields were passed, even of growers who usually are granted certification." In Weakley County, Tennessee, field counts made by Paul R. Miller showed an average loss of about 25 per cent, and in some fields it was as high as 65 per cent. Stem rot was prevalent in seed beds and fields in Arkansas. In Delaware there was said to be much more than usual. A considerable amount of replanting was necessary. In most of the other sweet potato growing States the usual amount occurred. Harold T. Cook reported that on the Eastern Shore of Virginia, "Much of the loss was overlooked owing to the luxuriant growth of the living vines during the rainy season." Estimates of loss include 30 per cent in Indiana, 20 in Iowa, 15 in Tennessee, 7 in Virginia and Kansas, 2 in Arkansas, 1.5 in Maryland, 1 in Delaware and Louisiana, and traces in South Carolina and Colorado.

SCURF (Monilochaetes infuscans) was the cause of serious losses in some places in New Jersey. In Virginia it caused a loss estimated at 1 per cent, in Maryland, 0.5 per cent. It was also reported in Connecticut where it had not been observed before, Delaware, Mississippi, and Kansas. In Indiana it was not seen in 1934.

STORAGE ROTS (various organisms) caused losses averaging about as usual.

MOTTLE NECROSIS (Pythium ultimum) was reported from Indiana as less prevalent than usual.

DROUTH INJURY caused very serious reduction in the crop of slips in Arkansas, also death of plants in fields, and severe cracking after rains.

OTHER DISEASES. WHITE RUST (Albugo ipomoeae-panduratae), New Jersey. SOIL ROT (Actinomyces sp.), Delaware, Maryland, Kansas. FOOT ROT (Plenodomus destruens), Maryland. RHIZOCTONIA (R. solani), Kansas. ROOT KNOT (Heterodera marioni), Mississippi. FASCIATION (non-par.), Connecticut, New Jersey. OEDEMA (non-par.), common in New Jersey. MOSAIC (undet.), Florida.

ONION

DOWNY MILDEW (Peronospora destructor = P. schleideni). Losses of 1 per cent were estimated in Massachusetts and Pennsylvania. In Pennsylvania the disease was said to be most severe on perennial onions. It was also reported from New York, New Jersey, and Washington.

SMUT (Urocystis cepulae) caused losses estimated at 6 to 7 per cent in New York, 4 per cent in Massachusetts, and 3 per cent in Ohio, and was also reported from Wisconsin. Davis and Boyd report a tendency of growers in Massachusetts to drop the use of formaldehyde treatment and to overcome the loss in stand by thick planting. In Orange County, New York, the average infection was 10 to 20 per cent, due to heavy spring rains. Some fields showed 60 per cent infection. In Western New York there was less than usual due to the drier season. Smut is generally distributed in onion-growing sections in Ohio but formaldehyde treatment is in almost universal use and keeps losses at the minimum, according to J. D. Wilson.

PINK ROOT reported as due to Phoma terrestris, occurred in New York and Ohio. There was more than usual in New York but the loss was slight as the yields were above normal. Japanese bunching types were reported as immune to the disease. One to 3 per cent loss was estimated in New York and 1 per cent in Ohio.

ROOT ROT, BULB ROT (Fusarium spp.). Root rot caused a loss of 5 per cent in Massachusetts and a trace in Colorado. Bulb rot was reported from Mississippi and on onions in storage in Massachusetts.

PURPLE BLOTCH (Macrosporium porri) caused 2 per cent loss in one large field in Oswego County, New York, and was observed in one or two other fields of late Sweet Spanish onions on new muck land. It was reported in northern Colorado. MOLD (Macrosporium parasiticum), was reported from New York and BLIGHT (Macrosporium sp.) from Washington.

STORAGE ROTS due to Botrytis allii, Penicillium spp., and Fusarium spp. caused a loss of 10 per cent of the stored crop in Massachusetts. NECK ROT (Botrytis allii) damaged a few plantings of sets in Massachusetts. It caused severe losses in storage and transit in Minnesota. A loss of 0.5 per cent of stored onions was estimated in New York. Botrytis sp. was reported as causing neck rot in Wisconsin and blight in New Jersey. BACTERIAL SOFT ROT (Bacillus carotovorus) occurred in New York, sometimes following sunscald, and in New Jersey. BLACK MOLD (Aspergillus niger) and SMUDGE (Colletotrichum circinans) were reported from New York.

OTHER DISEASES. ROOT KNOT (Heterodera marioni) was severe in certain fields in Ohio where a loss of 1 per cent was estimated. MOSAIC (virus) was observed on potato onions in Kentucky. SUN SCALD (non-par.) caused a loss of 1 per cent in New York.

CABBAGE

YELLOWS (Fusarium conglutinans). Michigan, Wisconsin, Minnesota, and Kansas reported that yellows has increased in prevalence and severity during the past few years. In Michigan it is rapidly becoming and in Kansas has already become the most serious cabbage disease. It was observed in Pennsylvania for the first time in several years. The losses reported were not very high, the greatest being 7 per cent in Maryland, others 2 per cent in Ohio and Michigan, 1 in New York, and traces in Pennsylvania and Virginia. New Jersey and Colorado also reported yellows.

CLUB ROOT (Plasmodiophora brassicae) was reported in its usual range. It was said to be the principal limiting factor on many farms in Massachusetts, where 2 per cent loss was estimated. Other losses reported were 1.5 per cent in Ohio, 0.5 in Maryland, and a trace in Pennsylvania.

BLACK LEG (Phoma lingam). The highest loss estimated was 2 per cent in Maryland. In New York, 1 to 2 per cent loss was reported on Long Island but only a trace up State, where the disease has been almost eliminated due to the stringent use of control measures. Black leg occurred in Massachusetts, New Jersey, Louisiana, and Wisconsin, also.

BLACK ROT (Bacterium campestre) was much more prevalent than usual in eastern Virginia where it caused a loss of 20 per cent. Very wet weather in August and September was believed to be the reason. One case was reported in Louisiana and another in Ohio of severe outbreaks in fields planted with treated seed. The loss in Ohio was estimated at 5 per cent, in New York at 3 to 5 per cent on Long Island and only a trace up State, in Pennsylvania at 2 per cent and in Maryland at 0.5 per cent. The disease was also reported from Massachusetts, New Jersey, Tennessee, where it was very severe in some fields in Cumberland County, Mississippi, Wisconsin, Minnesota, and Puerto Rico.

WIRE-STEM, BOTTOM ROT, Etc. (Corticium vagum). Wire stem was reported from New York, New Jersey, and Kansas. The loss in New York was 2 to 3 per cent. When plants affected even slightly with wire stem were set out, they failed to have large or solid heads. Damping-off was reported from New Jersey, root rot in Georgia, and bottom rot from Florida where it caused a loss of 3 per cent.

HEAD ROT (Rhizoctonia sp.) was reported from Wisconsin.

DOWNY MILDEW (Peronospora parasitica) caused losses of 2 per cent in Virginia and Florida and a trace in New York. In

New York, it occurred to some extent in nearly all fields. It was severe in some fields in New Jersey. In Virginia its appearance was delayed by very dry weather during the growing season and there was much less than usual. Delaware and Mississippi also reported its occurrence.

OTHER DISEASES. BLACK LEAF SPOT (Alternaria brassicae) causes some damage in storage in New York but is more important as a stem canker of seedlings. The loss was estimated at 1 to 3 per cent. In Ohio 0.5 per cent loss was reported. The disease occurred in Connecticut, New Jersey, Mississippi, and Wisconsin also. LEAF SPOT (Cercospora bloxami), New Jersey. PEPPERY LEAF SPOT (Bacterium maculicolum) was reported from New York where it is said to be rare. BACTERIAL SOFT ROT (Bacillus carotovorus) was very severe in Norfolk and Nansemond Counties in Virginia. The reduction in yield was said to be 20 per cent and an additional 20 per cent loss was due to storage rot. WATERY SOFT ROT (Sclerotinia sclerotiorum) caused some loss in field and storage in New York. OEDEMA (non-par.) was reported from New York and New Jersey. BLACK SPECK due to suboxidation was reported from Washington. TIP BURN (non-par.) caused loss ranging from a trace to 2 per cent in New York. The Danish Ball Head variety is very susceptible.

CAULIFLOWER

CLUB ROOT (Plasmodiophora brassicae). Losses reported were 3 to 5 per cent in New York and 2 per cent in Massachusetts. In New York 100 per cent infestation was observed in several fields but there was no apparent injury to the heads. In Massachusetts, dry weather weakened plants and made them less able to withstand the attack of the organism. New Jersey and Washington also reported club root.

BLACK ROT (Bacterium campestre) was reported on cauliflower from Massachusetts, New York, New Jersey, and Louisiana. In Massachusetts it became severe in September after rains began and caused heavy spotting of heads before and following harvest in scattered, late-planted fields. The loss was 5 per cent. In New York the disease is rather serious on Long Island, where 5 per cent loss was estimated. Only a trace occurred elsewhere in the State.

OTHER DISEASES. BLACK LEAF SPOT (Alternaria brassicae), New York, New Jersey. PEPPERY LEAF SPOT (Bacterium maculicolum), Massachusetts, New York. DOWNY MILDEW (Peronospora parasitica), New York. WIRE STEM (Corticium vagum), caused 1 to 3 per cent loss in New York. DAMPING OFF due to this organism was reported from New Jersey. BLACK LEG (Phoma lingam), Massachusetts, New York. YELLOWS (Fusarium conglutinans), Wisconsin. BACTERIAL SOFT ROT (Bacillus carotovorus) was prevalent in Delaware County, New York, following hot weather injury. The loss was estimated at 0.5 to 1 per cent. It was also reported from Massachusetts. WATERY SOFT ROT (Sclerotinia sclerotiorum), trace to 0.5 per cent in New York. WHIPTAIL AND BROWN ROT (non-par.) caused a loss of 26,000 crates in Delaware County, New York, but the loss for the State was a trace.

BROCCOLI

LEAF SPOT (Alternaria sp.) was reported from Louisiana. BLACKLEG (Phoma lingam) caused a loss of 5 per cent on Long Island, and was reported from New Jersey. BLACK ROT (Bacterium campestre) was favored by the wet weather of August and September and caused a 20 per cent loss in eastern Virginia. It was also reported from Wisconsin.

BRUSSELS SPROUTS

BLACK LEG (Phoma lingam) was very severe in some cases in New Jersey.

COLLARDS AND KALE

LEAF SPOT (Alternaria sp.), Louisiana, on collards. BLACK ROT (Bacterium campestre) on kale was reported from New Jersey and caused 20 per cent loss in eastern Virginia. CLUB ROOT (Plasmodiophora brassicae), New Jersey, unimportant.

HORSERADISH

WHITE RUST (Albugo candida), was nearly absent from greenhouse crops in New York in the winter due to cold and low humidity. In two fields 20 per cent infection was observed but losses were slight. It was also reported from New Jersey and caused 1 per cent loss in Ohio.

OTHER DISEASES. BACTERIAL SOFT ROT (Bacillus carotovorus) was general and caused severe losses in Nassau County, New York. ROOT ROT (Fusarium sp.) was isolated from roots of diseased plants in New Jersey. LEAF SPOT (Ramularia armoraciae), New York. FASCIATION (non-par.), New Jersey.

KOHL RABI

CLUB ROOT (Plasmodiophora brassicae). One hundred per cent infestation was observed in one field in Nassau County, New York.

RADISH

SCAB (Actinomyces scabies), Wisconsin. WHITE RUST (Albugo candida), New York, New Jersey, Pennsylvania, and Wisconsin. BACTERIAL SOFT ROT (Bacillus sp.), New Jersey. DOWNY MILDEW (Peronospora parasitica) was prevalent in fields in New York but did not cause much loss. It was absent from the greenhouse crop in the winter due to cold and consequent low humidity. BLACK ROOT (Pythium aphanidermatum), Massachusetts, Mississippi, Wisconsin. CLUB ROOT (Plasmodiophora brassicae) was rather severe in some fields in New York.

RUTABAGA

SCAB (Actinomyces scabies), New Jersey. DARK CENTER (non-par.) caused a loss of 10 per cent in Massachusetts. On Cape Cod, and in the western hill towns, entire fields or parts of fields were not dug due to this discoloration inside the roots. MOSAIC (virus), Connecticut.

TURNIP

GRAY LEAF SPOT (Alternaria herculea) was reported from New York where it is not often present. BACTERIAL SOFT ROT (Bacillus carotovorus), Mississippi. LEAF SPOT (Bacterium sp.), was observed to be severe in one small field near Athens, Georgia. BLACK ROT (Bacterium campestre) caused losses ranging from light to 75 per cent in some places in Massachusetts, and was also reported from Mississippi. ANTHRACNOSE (Colletotrichum higginsianum), Mississippi. DOWNY MILDEW (Peronospora parasitica), New Jersey. MOSAIC (virus), Mississippi.

WATERCRESS

BLIGHT, of undetermined cause, was reported from Washington.

CANTALOUPE

BACTERIAL WILT (Bacillus tracheiphilus) caused losses estimated at 10 per cent in Massachusetts, 5 in Ohio, 3 to 5 in New York, and 2 in Maryland and Iowa. The crop was planted much later than usual in Iowa, which accounts for the small loss in spite of favorable weather for the disease and a mild winter favoring survival of the striped cucumber beetle. Connecticut, New Jersey, and Minnesota also reported its presence. None was observed in Kansas.

WILT (Fusarium sp.) In New York, this wilt is mostly confined to the Lake Shore area of Monroe County, where approximately 50 per cent of the crop was killed. On one farm in Niagara County there was 80 per cent loss, on another 5 per cent. In Minnesota, Fusarium wilt is very destructive in the infested areas in Hennepin and Ramsey Counties, but it is not yet widespread. The hot, dry weather favored its attack this year and plants were destroyed in the early seedling stage. Fusarium wilt was also reported from West Virginia.

GUMMY STEM BLIGHT (Mycosphaerella citrullina) is becoming one of the serious problems in melon growing in New York, especially in the northwestern part of the State, according to Charles Chupp. The loss was estimated at 5 to 10 per cent. In a field in Monmouth County, New Jersey, the plants were completely killed in a space of 50 to 75 feet.

ANTHRACNOSE (Colletotrichum lagenarium). In Massachusetts, Boyd reported that anthracnose made pronounced headway on many farms in the latter part of August and September, in spite of the dry August weather. It caused severe fruit spotting in September and early October. The loss in Massachusetts was 3 per cent, in New York and Maryland about 0.5 per cent. In Minnesota it appeared too late to cause much damage; in Kansas very little anthracnose was seen. Other States reporting its occurrence were Connecticut, New Jersey, Tennessee, and Wisconsin.

LEAF BLIGHT (Macrosporium cucumerinum) apparently developed too late to be very important except locally. Iowa reported 10 per cent loss, Massachusetts 4, Ohio, 2, and New York a trace.

MOSAIC (virus) caused losses estimated at 4 to 5 per cent in New York and 0.5 per cent in Maryland, and was reported from New Jersey, Wisconsin, Minnesota, and Kansas. CURLY-TOP (virus) was destructive in the Pacific Northwest and in Idaho (P. D. R. 18: 168, 173).

OTHER DISEASES. SCAB (Cladosporium cucumerinum) caused a trace of loss in Massachusetts. POWDERY MILDEW (Erysiphe polygoni), New Jersey, Georgia. DOWNY MILDEW (Pseudoperonospora cubensis) was mostly reported as less prevalent than usual. Losses estimated were 1 per cent in Ohio, 0.5 in Massachusetts and Maryland. It also occurred in Connecticut, Delaware, Georgia, and Wisconsin. STEM ROT (Sclerotium rolfsii), Arkansas. LEAF SPOT (Septoria cucurbitacearum), reported from New York as rare.

NON-PARASITIC. Injury due to mineral deficiency and dry weather was very prevalent in Albany, Schenectady, and especially in Niagara, Counties in New York. In some fields in Niagara County injury ranged from none to 100 per cent. In Ohio heat injury during one week of 107° temperatures in July caused a loss of 30 per cent. It destroyed all early planted melons.

CUCUMBER

BACTERIAL WILT (Bacillus tracheiphilus) was generally said to be an important disease in the States reporting it. Losses estimated were 20 per cent in Massachusetts, 7 to 10 in New York, and 5 in Pennsylvania and Ohio. It was also reported from Connecticut, New Jersey, Delaware, and Wisconsin, and from Puerto Rico where it was said to be rare.

GUMMY STEM BLIGHT (Mycosphaerella citrullina) was more prevalent than usual or than last year in New York. It is becoming so serious that the cucurbit-growing industry of New York is threatened, according to Charles Chupp, and no control measures are available as yet. The loss was estimated at 10 per cent, with 20 per cent in some cases. The disease was not severe on cucumber in New Jersey.

DOWNY MILDEW (Pseudoperonospora cubensis) appeared late in most of the States reporting it. In Massachusetts it caused losses only in the latest plantings. S. P. Doolittle reported that downy mildew was severe at Beltsville, Maryland. In Ohio, the cool, wet September favored the spread of the disease near the end of the picking season. In Wisconsin it occurs only in greenhouses. In Puerto Rico downy mildew was said to be the most important disease of cucumbers. Losses reported were 10 per cent in Florida, where the disease is found throughout the year, 1 per cent in Massachusetts and Pennsylvania, 0.5 per cent in Ohio. Downy mildew was not observed in New York in 1934.

MOSAIC (virus) appears to be increasing in importance in field plantings outside the greenhouse area in Massachusetts, according to Boyd. It was very destructive in many crops late in the season. The total loss was estimated at 2 per cent. In New York it caused a loss of 15 to 20 per cent. In one field in Niagara County, 50 per cent loss occurred. In New Jersey, it was general but not severe. In Ohio, it was severe in certain fields, but was generally of slight importance. The loss was 2 per cent. It was not so severe as usual in Kansas. Mosaic was observed in a garden in Montana, apparently for the first time in the State. The total loss in Maryland was 4 per cent of which 2 per cent was reduction in yield. Mosaic was also reported from North Dakota and Wisconsin, and from Puerto Rico where it was said to be rare.

CURLY-TOP (virus) caused heavy losses in the Northwest (P.D.R. 18: 168, 173).

OTHER DISEASES. ANGULAR LEAF SPOT (*Bacterium lachrymans*) was reported from Massachusetts, New York, and Wisconsin. SCAB (*Cladosporium cucumerinum*) was common in July and August in Massachusetts but did little damage until the rainy weather of September. Massachusetts and Pennsylvania report good control by spraying. Losses reported were 2 per cent in Pennsylvania, 1.5 in Massachusetts, and a trace in New York. The disease occurred in Wisconsin also. ANTHRACNOSE (*Colletotrichum lagenarium*) caused little loss. One per cent was estimated in Pennsylvania and Ohio, and 0.5 per cent in Maryland. New Jersey and Wisconsin also reported its presence. POWDERY MILDEW (*Erysiphe polygoni*) Washington, Puerto Rico. LEAF BLIGHT (*Macrosporium cucumerinum*), 2 per cent loss in Maryland, a trace in New York, also reported from West Virginia, Tennessee, and Wisconsin. DAMPING-OFF (*Pythium* sp.), New Jersey. Damping-off, cause not mentioned, caused 25 per cent loss in Pennsylvania. FRUIT-ROT (*Pythium* sp.) was reported from Puerto Rico as important in rainy weather and in fields that have been in cucumbers previously. WILT, TIMBER ROT (*Sclerotinia sclerotiorum*) New York, Washington.

PUMPKIN

BACTERIAL WILT (*Bacillus tracheiphilus*) was general in New York where it caused a loss of 1 to 3 per cent. POWDERY MILDEW (*Erysiphe cichoracearum*) was general but caused only a trace of loss in New York; common in New Jersey and very severe in some fields; reported from Georgia. WILT (*Mycosphaerella citrullina*) was observed in one field on Staten Island, New York and seemed to be rather superficial on the fruit. The loss in the field was about 5 per cent. MOSAIC (virus), New Jersey.

SQUASH

BACTERIAL WILT (*Bacillus tracheiphilus*) was general on both summer and winter squash in Massachusetts. The loss was 10 per cent. In New York also it was general and caused severe loss in several fields. The loss for the State was 1 to 3 per cent. Bacterial wilt was also reported from New Jersey.

STORAGE DISEASES. In Massachusetts Fusarium spp., Penicillium spp., Rhizopus spp., Cladosporium cucumerinum, and bacteria caused 35 per cent loss to the stored crop, which is not more than one-third of the entire crop. Mycosphaerella and Cladosporium were less prevalent and the other organisms more damaging than usual.

MOSAIC (virus) caused a loss of 2 per cent in Massachusetts. Heavy losses occurred in some fields of summer squash, very little in others. Less damage was done to winter than to summer squash. A loss of 1 to 2 per cent was estimated in New York. The disease was also reported in Connecticut. F. L. Wellman reported that "Mosaic (celery virus 1) was severe in some fields in Southern Florida, on the East Coast and around Sanford. Circumstances had a great deal to do with severity of the trouble. I saw fields that had only a few infected plants along edges next to weed hosts; fields in which all plants were diseased, but about 50 per cent of the crop was harvested, and other fields which produced absolutely nothing and were plowed under." CURLY TOP (virus) was severe in the Northwest (P.D.R. 18: 168, 173).

OTHER DISEASES. BACTERIAL LEAF SPOT (Bacterium cucurbitae) was reported as not a common disease in New York and less prevalent than usual in 1934. SCAB (Cladosporium cucumerinum) was less important than usual in Massachusetts, due to dry weather in July and August, although it was surprisingly prevalent in some fields of summer squash as early as late July. It was most damaging to late plantings of summer squash and caused very little loss in winter squash. The loss was estimated at 1 per cent. POWDERY MILDEW (Erysiphe cichoracearum), Connecticut; always very common in New York when the plants are nearly mature; general in New Jersey, very severe in several fields in Middlesex County; Georgia and Washington. LEAF BLIGHT (Macrosporium cucumerinum), New York. GUMMY STEM BLIGHT, BLACK ROT (Mycosphaerella citrullina) was less destructive both on vines and on fruit in storage in Massachusetts, due to dry weather in July and August. The loss was 5 per cent. DOWNY MILDEW (Pseudoperonospora cubensis) was not reported on squash in 1934.

WATERMELON

BACTERIAL WILT (Bacillus tracheiphilus) caused 5 per cent loss in Maryland, and was reported from New Jersey.

WILT (Fusarium niveum) was reported from Virginia, Georgia, Florida, Mississippi, Minnesota, Iowa, Kansas, and Washington. Marion Walker in Florida reported that "The greatest loss from this disease is an indirect one occasioned by the necessity of seeking virgin soil each year." In Minnesota it was found for the first time at Winona and in Hennepin County near Minneapolis. The use of resistant varieties such as Iowa Belle, Iowa King, and Pride of Muscatine has reduced its importance in Iowa, where the loss was estimated at 5 per cent.

ANTHRACNOSE (Colletotrichum lagenarium) was less prevalent than usual in New Jersey, Maryland, and Kansas, more prevalent in Pennsylvania, Delaware, Florida, and Minnesota, and of average importance in other States reporting it. In Florida its development was favored by heavy precipitation during the period following setting of the fruit. It caused 25 per cent reduction in yield and 5 per cent loss from fruit spotting. In Minnesota, infection developed only after late rains when the peak of the harvest was already past, and although heavier than usual did not cause much damage. The loss in yield in Iowa was said to be 12 per cent. In Maryland, the reduction in yield was only 0.5 per cent but loss from fruit spotting was 6.5 per cent. Ohio reported 2 per cent reduction in yield.

OTHER DISEASES. GUMMY STEM BLIGHT (Mycosphaerella citrullina) was much more prevalent in Florida due to heavy rainfall during April and May. The loss was estimated at 5 to 10 per cent. DOWNY MILDEW (Pseudoperonospora cubensis) was also much more prevalent than usual in Florida, and Walker reported that this was the first time he had observed it to cause serious damage to watermelons. Downy mildew was also reported from Mississippi.

CELERY

EARLY BLIGHT (Cercospora apii). Less than usual was reported from Massachusetts, New York on muck soil, New Jersey, and Wisconsin, more in Pennsylvania and Michigan, and the usual amount elsewhere in New York, and in Florida and Ohio. In Pennsylvania, the disease was most severe near Philadelphia. In Michigan, due to severe drought and lack of heavy dews and fogs, the disease was of comparatively minor importance in 1934, after the heavy losses that it caused during the three preceding seasons. Losses reported as due to early blight were 15 per cent in Pennsylvania, 5 in Florida, 4 in Massachusetts, 2 in Ohio, trace to 1 per cent in New York, and a trace in Michigan.

LATE BLIGHT (Septoria spp.) became destructive to many late plantings in Massachusetts during October. Earlier it had been held in check by dry weather. In western New York, there was less than usual due to drought, elsewhere in the State, and in New Jersey, Pennsylvania, and Ohio more was reported. Late blight was very severe in some plantings in New Jersey, especially in the north. In Pennsylvania it occurred wherever celery was grown but was most severe outside of the Philadelphia area. Cool weather and excessive rains in late fall favored the development of the disease in Ohio. Michigan, Wisconsin, and Colorado reported less than usual, due to dry, hot weather. North Dakota and Washington also reported late blight. Losses were estimated at 20 per cent reduction in yield and 5 per cent loss in grade in Pennsylvania, 5 per cent in Ohio, 4 in Massachusetts, 2 to 3 in New York, and traces in Michigan, North Dakota and Colorado.

YELLOWS (Fusarium sp.) is now known to occur on eighteen farms in Wayne and Monroe Counties, New York. More than usual was reported from Pennsylvania, Ohio, and Michigan, and the usual amount from Wisconsin and Colorado. In Ohio yellows was very severe in certain fields and indications are that growers will be compelled to use resistant strains. A more general use of Michigan State College resistant varieties prevented very heavy losses in the Kalamazoo area. The new "Michigan Golden" variety proved highly satisfactory in 1934 in Michigan, and in New York and Colorado as well. Losses reported were 10 per cent in Colorado, 8 in Michigan, 3 in Ohio, and a trace in Pennsylvania.

ROOT KNOT (Heterodera marioni) is becoming increasingly prevalent in Ohio celery fields especially on muck lands. In Michigan, severe cold weather did not kill out the nematode in muck soils. The disease reappeared in fields where it caused damage in 1933 but much less seriously. Losses reported were 2 per cent in Ohio and a trace in Michigan.

BLACK HEART (non-par.) was reported from New Hampshire and New York. In New York it was said to be worse than usual due to wet weather in the spring followed by a hot dry summer. The newer strains of Golden Self Blanching are susceptible. A report on the distribution, etc. of blackheart was given in P. D. R. 18: 177-185. CRACK STEM (non-par., cause unknown) was reported from New Hampshire, Connecticut, Florida, Michigan, and Washington. In Connecticut the trouble was ascribed to variable wet and dry weather and had not been observed previously. In Florida, according to F. L. Wellman, "This trouble was severe again in the spring of 1934. It has been severe for the last four seasons at least, and caused much damage each year. Losses expressed on a percentage basis have not been attempted. One large grower lost over 20 per cent of his crop in a twenty-acre block of celery, and another grower lost around 12 per cent in a forty-acre block." In Michigan it is an important disease where conditions favor it. It usually occurs in highly alkaline soils but occasionally in acid soils. Soil deficiency was said to be the cause in Washington. DROUGHT AND HEAT INJURY to celery was severe in Michigan. Heavy losses occurred in seed beds where the stands were poor and the young plants were injured by high soil temperatures.

MOSAIC (virus), Connecticut, New York, California.

SOUTHERN CELERY MOSAIC (celery virus 1): This virus disease was extremely troublesome in Florida in the winter of 1933-34, and caused very severe losses in many fields in the late spring of 1934. This was especially keenly felt by growers because of the relatively narrow margin of profit experienced by them at harvest time. In the Sanford region, losses over the district as a whole must have been close to 5 per cent. Some growers were forced to abandon certain of their fields completely. Others threw out large quantities of the crop at harvest time. (F. L. Wellman)

OTHER DISEASES. Several diseases were reported from New York. BACTERIAL SOFT ROT (Bacillus carotovorus) caused a trace of loss in the field and 2 to 3 per cent in storage. Six per cent loss was observed on one forty-acre field on muck soil in Wayne County growing its first crop. It was absent on lettuce in the same field. GRAY MOLD ROT (Botrytis cinerea), ROOT ROTS (Corticium vagum, Phoma apiicola), BACTERIAL BLIGHT (Phytomonas apii) caused traces of loss. WATERY SOFT ROT (Sclerotinia sclerotiorum) caused 5 to 10 per cent loss in storage, and a trace in the field. It was also reported from Colorado.

LETTUCE

BOTTOM ROT (Corticium vagum). Many fall crops in Massachusetts were badly damaged after the September rains began. The disease was not uncommon in the early summer crop also. In up State New York it caused almost no trouble most of the summer due to the very dry condition of the muck soil. The loss in Massachusetts was estimated at 4 per cent, in New York at a trace to 1 per cent. The disease was also reported from Mississippi. Damping-off due to Rhizoctonia sp. was very severe on Romaine lettuce in New Jersey. One brand of formaldehyde dust used at the rate of one ounce to the square foot gave no appreciable control.

DROP (Sclerotinia spp., mostly reported as S. sclerotiorum). In Massachusetts, this was the most common cause of injury in greenhouse crops and coldframes, in field crops it was less important than bottom rot. The loss was said to be 1 per cent. In New York drop caused 2 to 4 per cent loss in greenhouses and a trace to 2 per cent in fields. Ten to 20 per cent was observed in several fields in Nassau County.

A loss of 10 per cent was reported from Florida, 1 per cent in Ohio, and a trace in Pennsylvania. Sclerotinia minor was very severe in some fields in New Jersey.

YELLOWS (rabbit-ear or white heart; due to virus). The loss in a few fields in New York reached 70 to 80 per cent. For the State it was estimated at 5 per cent. In Ohio it appeared in rather severe form in some fields, causing a loss averaging 0.5 per cent. MOSAIC (virus) was present in almost every field in New York. The loss was estimated at 0.5 per cent.

TIPBURN (non-par.) caused a loss of 5 to 7 per cent in New York where there was less than usual, and was also reported from New Jersey and Wisconsin.

OTHER DISEASES. GRAY MOLD ROT (Botrytis cinerea) New York, New Jersey. DOWNY MILDEW (Bremia lactucae), Massachusetts, New York, New Jersey. In up-State New York there was less than usual due to the dry season, but one rather severe outbreak in September followed a period of cool weather in August. DAMPING-OFF (Pythium sp.) New Jersey. LEAF SPOT (Septoria lactucae), New York, rare.

PEAS

A report on the occurrence of bean and pea diseases in some of the western States in 1934, by L. L. Harter and W. J. Zaumeyer, was published in the Reporter (19: 142-144).

BACTERIAL BLIGHT (Bacterium pisi) caused losses estimated at 3 per cent in Colorado, 0.2 per cent in Maryland, and a trace in New York, and was reported from Wisconsin.

ROOT AND STEM ROTS. Losses from root rots in general will be reported in the Crop Loss Estimate Supplement 89. Commercial production of peas in Massachusetts is made unprofitable by losses from disease, and very heavy losses occur in home gardens. Aphanomyces euteiches was reported from Massachusetts, New York, New Jersey, Maryland, and Wisconsin mostly as less important than usual. The loss in Maryland was estimated at 3.5 per cent. Corticium vagum was reported from New York, where it caused about 0.5 per cent loss; New Jersey; Florida, where it was most severe on early fall plantings on poorly prepared land; and Washington. Fusarium martii pisi occurred in Virginia, Ohio, where the loss was 1 per cent, Wisconsin, and Colorado. Fusarium sp. was reported from Washington.

FUSARIUM WILT. Fusarium orthoceras pisi was reported from Maryland and Wisconsin. The use of resistant strains is reducing losses in both States. The loss in Maryland was 0.5 per cent.

Wilt due to *Fusarium* spp. was said not to be common in New York and was reported from New Jersey. "Near wilt" caused by *Fusarium* sp. was reported from Washington.

BLIGHT, POD SPOT, AND FOOT ROT (*Ascochyta* spp. and *Mycosphaerella pinodes*). Ascochyta blight was of unusual importance in the Santa Maria district in California in the spring. *Ascochyta pisi* caused 3 per cent loss in the San Luis Valley of Colorado. *Mycosphaerella pinodes* was much less prevalent than usual in Wisconsin. Ascochyta and Mycosphaerella were reported as less prevalent than usual in Maryland and much less so in New York.

RUST (*Uromyces fabae*). What was apparently the first report of rust on peas in New England was made by O. C. Boyd from Massachusetts in July, 1934. A light scattered infection occurred in one field. In August 1935 Florence L. Markin reported that during the summer of 1934 it had been observed to be abundant at several places in Maine. (P. D. R. 18: 124; 19: 226).

MOSAIC (virus) was very abundant in several plantings in New Jersey and was reported from Washington and New York. STREAK was reported from Washington.

OTHER DISEASES. POD-SPOT due to *Botrytis cinerea* and bacteria, and BLACK POD SPOT, cause undetermined, were reported from Washington. WHITE MOLD (*Cladosporium album*), New Jersey. POD SPOT (*Cladosporium pisicolum*), Oregon, not important. ANTHRACNOSE (*Colletotrichum pisi*), Wisconsin. POWDERY MILDEW (*Erysiphe polygoni*), New York, Wisconsin, Washington. DOWNY MILDEW (*Peronospora pisi*), rare in New York, reported from Wisconsin and Washington. BLOTCH (*Septoria pisi*), Wisconsin.

DROUGHT INJURY caused heavy loss to the early crop in Wisconsin. In the central section it was hardly worth cutting. Hot winds caused excessive damage in the blossom stage.

ASPARAGUS

STEM ROT, WILT (*Fusarium* sp.) was reported from Massachusetts, New York, and New Jersey. In Massachusetts it caused a loss estimated at 5 per cent. RUST (*Puccinia asparagi*) caused losses estimated at 2 per cent in Massachusetts and 1.5 per cent in Maryland and was reported also from New Jersey, Wisconsin, North Dakota, and Colorado. There was more than usual in Massachusetts, according to O. C. Boyd, who stated that varieties reported to belong to the resistant Washington group were severely damaged in a number of beds. TIP WILT (*Alternaria* sp. and *Botrytis cinerea*) was reported from Massachusetts. STEM BLIGHT (*Cercospora caulicola*) was severe in one field in Georgia but occurred too late to cause damage to the plants. FASCIATION (non-par.) occurred in Connecticut and New Jersey.

BEET

SCAB (Actinomyces scabies) caused a loss of a trace to 2 per cent in New York. One field was observed with 90 per cent infection. It was also reported from New Jersey and Wisconsin. LEAF SPOT (Alternaria sp.), New Jersey. LEAF SPOT (Cercospora beticola), generally reported but caused little damage. One per cent loss was estimated in Ohio. ROOT KNOT (Heterodera marioni), Mississippi. DAMPING-OFF (Pythium sp., Rhizoctonia sp., etc.) is the cause of severe losses in stand in home gardens and moderate to heavy losses in commercial plantings in Massachusetts, where a loss of 10 per cent was estimated. Marked control is obtained by seed treatment with red copper oxide. Damping-off caused loss averaging 10 per cent in Nassau County, Long Island. Many hundred pounds of seed were treated with red copper oxide in New York. New Jersey also reported damping-off. CURLY-TOP (virus) was severe in the Pacific Northwest (P.D.R. 18: 168).

CARROT

LEAF BLIGHT (Macrosporium carotae) was destructive to fall crops in the Connecticut Valley and other scattered localities in Massachusetts, where lack of crop rotation favors the disease. It was rather prevalent in New York and caused total loss in some fields in Nassau County. In New Jersey it was very severe in some fields in Middlesex County. Losses estimated as due to this disease were 10 per cent in Pennsylvania, 8 in Florida, 5 in Massachusetts, 1 to 2 in New York. Together with Cercospora it caused 1 per cent loss in Ohio.

LEAF BLIGHT (Cercospora apii carotae) was reported from Massachusetts as "destructive in many towns in the eastern part of the State where leaf troubles are rarely of any importance; just why, not known. It caused severe damage in June and July, let up in August, and became active again in the fall." The loss was said to be 5 per cent. The disease was not severe in New York or Ohio.

DAMPING-OFF (various organisms) caused a loss of 5 per cent in Massachusetts. Most of the injury occurs before the seedlings emerge. Seed treatment with red oxide of copper or organic mercury controls it.

YELLOWS (virus) was prevalent in New York on Long Island and on muck soils. The loss was a trace to 1 per cent.

OTHER DISEASES. BLACK ROT (Alternaria radicina), New York. BACTERIAL SOFT ROT (Bacillus carotovorus), New York, New Jersey. ROT (Corticium vagum), New York, New Jersey. Decay caused by the Corticium stage was reported by G. B. Ramsey on carrots from New York. (P.D.R. 18: 40). ROOT-KNOT (Heterodera marioni) was less abundant than usual in muck soils in New York, due to the cold winter. It was also reported from Georgia. WATERY SOFT ROT (Sclerotinia sclerotiorum), on carrots in storage in Massachusetts and New York. The loss in Massachusetts was 5 per cent.

EGGPLANT

FRUIT ROT AND BLIGHT (Phomopsis vexans) was reported from New York where it was unimportant; New Jersey where it was severe in some plantings; Mississippi; and Ohio where the loss was estimated at 4 per cent.

WILT (Verticillium sp.). In Massachusetts it is very difficult to grow a profitable crop on old market garden land due to this wilt. It caused a loss of 20 per cent in Massachusetts. In New York it kills a large part of the crop every year. It was also reported from New Jersey and from Ohio where it caused a loss of 10 per cent.

MOSAIC (virus), New Jersey. CURLY TOP (virus), Pacific Northwest (P. D. R. 18: 168).

LEAF SPOT (Alternaria solani), Massachusetts, New York, not important.

LEEK

PINK ROOT (Phoma terrestris) was reported from one locality in New York.

PARSLEY

LEAF SPOTS (Alternaria sp. and Septoria petroselini) were reported in New Jersey.

PARSNIP

LEAF BLIGHT (Cercospora pastinacae), New York, New Jersey. LEAF BLIGHT (Ramularia pastinacae) was general and severe in

Massachusetts, also reported from New York and Ohio. ROOT CANKERS, due to various soil fungi, caused severe losses in a number of fields in Nassau County, New York. RUSSETING, thought to be due to some soil condition, Washington.

PEPPER

LEAF SPOT, FRUIT SPOT (Alternaria sp.) was reported from New York (as A. solani), New Jersey, Ohio, and Colorado. A loss of 3 per cent was reported in Ohio, and a trace to 0.5 per cent on Long Island.

ANTHRACNOSE was reported from Louisiana. Both Colletotrichum nigrum and Glomerella cingulata occurred on the Bell and Cheyenne varieties and the former organism was found on one pod of Tabasco pepper.

DAMPING-OFF (Pythium sp., Rhizoctonia sp.) was very destructive in seed-beds, both flats in greenhouses and hot-beds, on many farms in Massachusetts where control measures were not observed. It was well controlled by formaldehyde dust on seed-bed soil. Cuprous oxide seed treatment was less effective. The loss was estimated at 15 per cent of the seedlings. Rhizoctonia sp. caused damping-off and stem rot in New Jersey.

MOSAIC (virus) was reported from Massachusetts, Connecticut, New York, New Jersey, Virginia, and Colorado. One case in which the disease appeared to be seed-borne was observed in Virginia. In Massachusetts a loss of 2 per cent was reported, in New York, 0.5 per cent. In New Jersey both the common pepper mosaic and tobacco mosaic were reported on pepper. The tobacco mosaic caused conspicuous blotching of the pods and some defoliation, but no leaf blotching.

CURLY-TOP (virus), Pacific Northwest (P.D.R. 18: 168).

GRAY MOLD (Botrytis cinerea), New Jersey. FRUIT ROT (Phoma destructiva), Mississippi. WILT (Phytophthora capsici) caused a loss of 0.5 per cent in Ohio, and was reported to occur in Colorado in the Arkansas Valley and the northern part of the State. STEM ROT (Sclerotium rolfsii), local on Bell pepper in Georgia. ROOT-KNOT (Heterodera marioni), Mississippi. ROOT ROT (undet.) of Tabasco pepper was reported from Louisiana. The entire plant wilted but there were no symptoms of any vascular organisms. The roots showed severe rotting.

NON-PARASITIC. BLOSSOM-END ROT caused a loss of 0.5 to 1 per cent in New York and was reported from Mississippi. LEAF ROLL occurred wherever peppers were grown in New Jersey. LIGHTNING INJURY

New Jersey. SUNSCALD was general in New York, where it caused a loss of 0.5 to 2 per cent, and occurred in New Jersey and Mississippi.

RHUBARB

CROWN ROT. Phytophthora parasitica rhei was found during December in a forcing greenhouse at Canastota, Madison County, New York. The roots apparently had been brought from the central States, and the temperature kept too high in the greenhouse. (C. Chupp). Phytophthora sp. was reported from Arkansas and Ohio. In Arkansas it is very destructive and is the limiting factor in rhubarb culture.

LEAF SPOT (Ascochyta rhei) was reported once in Connecticut. BACTERIAL ROOT ROT occurred in New Jersey. LEAF SPOT (Phyllosticta straminella) was very common in all plantings in New York but was not important. In Nassau County 50 to 60 per cent infection occurred but losses were slight. There was less than usual, due to dry weather, in Ohio, and no loss resulted from it. RED LEAF (virus), Washington.

SALSIFY

WHITE RUST (Albugo tragopogonis) was general in New York where it caused a loss of a trace to 2 per cent. It was very severe in one field in Nassau County. It was also reported in Wisconsin. LEAF SPOT (Sporodesmium scorzonerae) was not found in New York although in 1933 it was abundant in one field on Staten Island. YELLOWS (virus) was seen to a slight extent in every planting in Richmond County, Staten Island, New York.

SPINACH

DOWNY MILDEW (Peronospora effusa) was of little importance in Massachusetts even after wet weather began in September. The loss was said to be 1 per cent. In New York a loss of 1 to 3 per cent occurred on Long Island, but there was only a trace elsewhere. Pennsylvania reported 1 per cent loss, Maryland 0.5 per cent. In Eastern Virginia a total loss of 10 per cent was reported of which 5 per cent was reduction in yield. The loss was confined to the spring crop. Dry weather in October and November prevented the appearance of downy mildew until two months later than usual and losses in the fall crop were negligible. The source of inoculum of much of the downy mildew on the spring crop in the Norfolk region has been shown to be systemically infected plants that live through the winter. It was thought this year that the severe winter would have killed out most of these plants but this did not prove to be the case. In Arkansas, the disease was prevalent and destructive during late fall and winter.

A loss of 0.5 per cent was reported from Ohio.

DAMPING-OFF (various fungi) was very important in Massachusetts and Pennsylvania and moderately so in eastern Virginia, and Ohio. In Massachusetts, it was prevalent in both home gardens and commercial fields. Good control was obtained in both spring and fall sowings with cuprous oxide seed treatment. In Virginia, where the cause was reported as Pythium sp., seed treatment practically eliminated losses. Most of the damage occurred early in the season when the abundant moisture and warm temperatures were favorable. The cold dry weather of October prevented its development. Losses reported were 20 per cent in Pennsylvania, 10 in Massachusetts, 5 in Ohio, and 2 in Virginia.

LEAF SPOT (Cercospora beticola) was reported from New York as not common. ANTHRACNOSE (Colletotrichum spinaciae) was reported for the first time from Mississippi. A severe outbreak occurred in the vicinity of Laurel. CHLOROSIS due to manganese deficiency, New Jersey. YELLOWING, apparently due to unfavorable growing conditions, was more severe than usual on the fall crop in Massachusetts. YELLOWS or MOSAIC (virus), New York and Maryland.

SWISS CHARD

LEAF SPOT (Cercospora beticola) occurred in scattered localities in New York. The loss in one field was 50 per cent, but generally there was only a trace. It was also reported from New Jersey and Georgia. ROOT ROT (Sclerotinia sp.), Mississippi. CURLY TOP (virus) Pacific Northwest (P.D.R. 18: 168).

DISEASES OF SPECIAL CROPS

TOBACCO

A summary of tobacco diseases in 1934 in some of the Atlantic Coast States is given in the Reporter, Vol. 18: 154 - 155.

DOWNY MILDEW (Peronospora tabacina Adam) was reported from Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. A grower from central Tennessee reported a disease on his tobacco plants which, from his description, appeared to be downy mildew, but no definite record of its presence was received. The disease was not observed in Kentucky, and is believed never to have appeared there. Under date of February 13, 1935, Dr. Frederick A. Wolf requested that a statement be included in this summary to the effect that the reported occurrence of downy mildew of tobacco in Kentucky (Downy mildew (blue mold) of tobacco, Bulletin of the North Carolina Department of Agriculture, December, 1934, page 3) is founded on an unauthenticated report. Dr. W. D. Valleau of the Kentucky Agricultural Experiment Station verbally expressed his belief, March 9, 1935, that this disease had not been observed in the State up to that date, and concurred in the request for this correction. It appears, therefore, that the distribution of the disease was not extended in 1934. The severity of attack was generally reported as lighter than in 1933, and the damage slight.

MOSAIC (virus) was reported from Massachusetts, New Jersey, Maryland, Virginia, Kentucky, North Carolina, Florida, and Ohio. Prevalence was reported less than in 1933 in Massachusetts, New Jersey and Western Kentucky, and about the same in Maryland, Florida, and Ohio. The reduction in yield in Maryland was estimated at 3 per cent with loss in quality of an additional 4 per cent. According to W. D. Valleau, several forms of mosaic were observed on tobacco in Kentucky including the vein banding type due to the rugose mosaic virus of potatoes, the cucumber mosaic, three strains of etch viruses, as well as ordinary tobacco mosaic. Tobacco growing near potatoes in places developed as high as 50 per cent infection of rugose mosaic by late summer. On the Station farm at Lexington, the etch viruses which evidently overwintered in solanaceous weeds were much more abundant than for several years. The cucumber type was also unusually prevalent on the Station farm but is not ordinarily abundant in the State except in market gardening sections. There was excellent evidence on the Station farm that several strains of the common tobacco mosaic were introduced into the plantings by insects during the summer and not on the hands of the workers. In one small field of tobacco close to a field in which numerous infected solanaceous weeds were present, with many in the plantings also, mosaic of a peculiar yellow type was present in nearly all plants by fall. The plants were not handled following setting.

RING SPOT (virus) was reported from Maryland in slight amount and from Kentucky where in contrast to certain mosaic viruses there was but little spread.

CURLY TOP (virus). This disease was observed on tobacco grown in a garden in western Oregon (P.D.R. 18: 170).

BLACK ROOT ROT (Thielavia basicola) was less prevalent than in 1933 or in average years in Massachusetts, Maryland, and Kentucky where losses of only a trace occurred; present in about the usual amounts in Virginia and the Piedmont area of North Carolina, and more prevalent than in 1933 in scattered localities in Ohio where losses were estimated at 0.5 per cent.

WILD FIRE (Bacterium tabacum). Traces of infection were observed in scattered localities in Massachusetts, Ohio and Florida. The disease occurred very generally in seed beds in Pennsylvania and Maryland but was less severe than in 1933. In Pennsylvania it developed in most fields causing an estimated loss of 15 per cent. In Maryland it developed in only a few fields, and losses were estimated at 2 per cent. It occurred in plant beds and in the field in the vicinity of Murray, Kentucky, causing considerable damage on an occasional field.

BLACK FIRE (Bacterium angulatum) was less or much less prevalent than usual with only slight losses in Massachusetts, Maryland, southwestern Virginia, North Carolina, and Ohio. Some growers in Eastern Virginia suffered heavy losses. It developed in several areas in western Kentucky at topping time and caused rather extensive damage where rains continued following topping. The disease was also reported from Tennessee. It was not observed in Florida.

GRANVILLE WILT (Bacterium solanacearum) caused some damage in Virginia and was very destructive in three counties in the Piedmont region of North Carolina where the disease is a limiting factor in production. It occurred in about the usual amount in scattered fields in Florida.

BLACK SHANK (Phytophthora parasitica nicotianae) showed some spread in the infected area near Winston-Salem, North Carolina, and was generally distributed with about the usual prevalence in Florida.

FROG EYE (Cercospora nicotianae) was unusually prevalent in southwestern Virginia, Kentucky, Tennessee where the disease was so severe in some fields that the farmers did not take the trouble to cut their tobacco, North Carolina and South Carolina; and present in about the usual prevalence generally in Florida.

ROOT KNOT (Heterodera marioni) was reported from Scott County, Virginia, North Carolina, South Carolina, Georgia, and Florida.

DAMPING OFF (Pythium, Rhizoctonia, Fusarium, etc.) was reported from Massachusetts and Ohio as less prevalent than usual and causing little or no damage.

FUSARIUM WILT (Fusarium oxysporum nicotianae). Maryland reported the usual traces of this disease. It is becoming more general in Kentucky but resistant strains of hybrid Burleys under test in infested soils gave promising results. In scattered localities in Ohio the disease was more prevalent than usual but caused no reduction in yield.

SOUTHERN STALK ROT (Sclerotium rolfsii) was reported as present and apparently increasing in prevalence in North Carolina and South Carolina.

SORE SHIN (Rhizoctonia bataticola) was reported from Kentucky as occurring during a period of high temperature. The causal organism was identified in culture.

VERTICILLIUM WILT (Verticillium alboatrum) was reported from a field in Tennessee.

LEAF SPOT (Alternaria sp.). Florida.

FRENCHING (non-parasitic) caused a trace of loss in Maryland and was present to an unusual extent in southwestern Virginia and in Kentucky where the disease, which is most commonly found on limed land, was aggravated by heavy rains in midsummer.

DROUGHT SPOT (Physiological). Drought spot was much less prevalent than usual due to plentiful rainfall in tobacco-growing regions. It was reported as general in Western Kentucky but caused little damage.

POTASH HUNGER was estimated to cause a 10 per cent reduction in yield in Massachusetts.

HAIL INJURY. Connecticut.

SUN SCALD. Kentucky.

COTTON

ANTHRACNOSE (Glomerella gossypii) was reported from Tennessee, North Carolina, South Carolina, Georgia, Mississippi, Texas and Arkansas. It was estimated to have caused a loss of 37 per cent in one field in Tennessee and 10 per cent in another but occurred only locally. In North Carolina the disease was more prevalent than in 1933 but less serious on farms practicing careful seed selection. The loss was estimated at 1 per cent. Anthracnose caused heavy losses to young seedlings in South Carolina which was followed by some boll-rot with a 5 per cent reduction in yield. Three counties in northeastern Georgia reported 5 per cent loss, Mississippi the usual amount, and Texas 1 to 2 per cent. It was less prevalent than usual and of little importance in Arkansas. Reporting from Mississippi, Louisiana, and Texas, D. C. Neal of the Division of Cotton and Other Fiber Crops and Diseases writes as follows:

"Anthracnose was very prevalent this season on certain varieties in the regional cotton variety test at Rowlatt, Texas. Given in order of susceptibility and damage to stands, the disease was found on the following varieties: Delfos 531-A, Arkansas Trice, Arkansas Acala 4067, Arkansas Acala 891, Arkansas 17, Arkansas Rowden, Acala Watson, Acala Rogers, D. & P. L. - 10, Stoneville 5, Oklahoma Triumph 44.

"The damage to Delfos 531-A was estimated to be about 50 per cent, which necessitated replanting. Anthracnose was also prevalent on seedlings of the above variety in the wilt experiments at Poplarville, Mississippi. Damage in Mississippi and Louisiana is estimated at about 2 per cent. The disease was negligible in Texas blackland cotton belt but caused 2 per cent loss in east Texas. The loss for the State was probably 1 to 2 per cent."

ANGULAR LEAF SPOT (Bacterium malvacearum) was very prevalent in Mississippi, Louisiana, northeastern Arkansas, and southwestern Tennessee following a tropical disturbance in July and was more prevalent than in ordinary years in North Carolina, South Carolina, and Georgia. Estimated losses reported were 2 per cent in North Carolina, South Carolina, Georgia, Mississippi, and Louisiana, and 1 per cent in Texas. Arkansas reported normal distribution but little injury except in the northeastern part of the State. One severe outbreak was reported from Puerto Rico.

SORE SHIN (Corticium vagum) occurred with the usual prevalence in Louisiana and Arkansas. The disease is said to be always important in early planted cotton in Arkansas. Seed planted the last ten days of April may often give only a half to a fourth the stand obtained from the same seed planted two weeks later.

ROOT ROT (Phymatotrichum omnivorum) caused much less loss in Texas than in 1933 due to dry weather and late occurrence of the disease. The loss is estimated at 6 to 7 per cent. Presence of the disease was also reported in Miller and Little River Counties in Arkansas.

FUSARIUM WILT (Fusarium vasinfectum) was reported from Tennessee, South Carolina, Mississippi, Louisiana, Texas, and Arkansas. According to D. C. Neal, the disease is on the decline in the Gulf Coastal Plain regions of Mississippi, Louisiana, and Texas, due to the use of wilt-resistant varieties and improved fertilizer practice. Losses for these districts are estimated at 3 per cent; for South Carolina 2, and Arkansas 5. A maximum injury of 75 per cent was reported from a field in Tennessee. A report on the effect of wilt on cotton varieties in experimental plantings in Arkansas is given in the Reporter 18:56.

VERTICILLIUM WILT (Verticillium alboatrum) was found in Tennessee and Mississippi. It caused considerable damage on black muck soil in Tennessee. Counts in one forty-acre field showed 3 per cent wilt. It was considerably less prevalent in the Mississippi Delta than usual and probably caused not more than 1 per cent loss.

POTASH HUNGER (non-parasitic) was reported from Tennessee and Mississippi in about the usual amount. In Arkansas it was very common, especially in the eastern half of the State on sandy alluvial soil, and is regarded as one of the most serious troubles of cotton. Loss was estimated at 5 per cent.

BOLL ROT (Diplodia gossypina) occurred in Louisiana and Texas but did not cause serious damage. The fungus was found attacking the roots of cotton at the U. S. Cotton Breeding Station, Greenville, Texas, resulting in death of the plants, according to D. C. Neal.

ROOT KNOT (Heterodera marioni) was reported as causing 2 per cent loss in South Carolina and in Arkansas.

MISCELLANEOUS INJURIES AND FUNGI. Drought injury caused great reduction in yield in Arkansas; lightning injury was reported from Mississippi; "sand drown" due to magnesium deficiency caused 2 per cent loss in North Carolina and a pink boll rot caused by Fusarium sp. injured the crop there to the extent of 2 per cent. A leaf and stem blight caused by Ascochyta gossypii was prevalent in parts of Walker County, Georgia.

"A Hydnaceous fungus, closely resembling Hydnum omnivorum Shear, and previously described in Jour. Agr. Res. 30: 475-477, 1925, was found by the writer attacking cotton at Poplarville and Scott, Mississippi, and also at Brenham, Texas. The fungus at Brenham occurred on the roots of plants also affected with Phymatotrichum root rot. At Scott, Mississippi, the writer, accompanied by Dr. L. E. Miles of the Mississippi Experiment Station, found the fungus on both live and dead plants and on sections of old stems with teeth of the hymenium clearly formed and bearing basidia and basidiospores. Cultures were obtained for subsequent inoculations." (D. C. Neal)

HOPS

DOWNY MILDEW (Pseudoperonospora humuli) was reported from Washington and California.

LEAF BRONZING (non-par.) occurred in Washington.

PEANUTS

LEAFSPOT. Cercospora sp. was reported from New Jersey, C. arachidicola from Arkansas, C. personata from Kentucky.

POD ROT (Diplodia natalensis). In a carload of Spanish peanuts examined at Savannah, Georgia, 70 per cent of the hulls were black and the mycelium was penetrating the seed. At least 10 per cent of the nuts were damaged.

ROOT ROT (Sclerotium rolfsii) was reported from Tennessee and Arkansas.

DISEASES OF SUGAR CROPS

SUGAR CANE

The following summary was prepared by the persons whose names appear at the end of the respective paragraphs.

MOSAIC (virus). The sugar district of Louisiana experienced even more abundant secondary spread of the disease than occurred during 1933. Many fields of the leading commercial variety, Co. 281, became practically 100 per cent mosaic, and nearly every field developed a high percentage. Fields of the more recently introduced and more resistant Co. 290 showed also considerable increase in mosaic percentages. One field of the usually mosaic-free, C.P. 807, developed scattered infections and occasional diseased stools were encountered for the first time in C.P. 28/11 and C.P. 28/19, released for commercial cultivation in the fall of 1934. Four distinct types of mosaic were found in Louisiana and differentiated by consistent differences in appearance on Louisiana Purple or other test varieties (Phytopath. 24: 1040-1042. Sept. 1934). Type 3, of which only about 25 affected stools have been found, is of greatest potential importance because of its severity on all varieties tested. (E. M. Summers).

RED ROT (Colletotrichum falcatum) has diminished in importance in the Sugar Belt of Louisiana with the decline in acreage of the very susceptible P.O.J.213, which has rapidly been replaced by the resistant Co. 281 and other varieties. With very few exceptions the acreage of P.O.J. 213 planted in the past two years has been less than 10 per cent of the total, and on most plantations this has been for the purpose of maintaining a seed supply. Co. 281, Co. 290, P.O.J. 234, and C.P. 807 have continued to give satisfactory stands and to show relatively little red-rot damage following borer injury to standing cane. The same is true of the recently released C.P. 28/11 and C.P. 28/19. (E. V. Abbott).

SUGAR BEET

CURLY TOP (virus) was much more prevalent than usual in most of the area where it occurs, although in many States severe loss was concentrated in certain localities. The winter of 1933-34 in the Northwest was exceptionally mild and permitted an unusual amount of overwintering of both the beet leafhopper and susceptible host plants. As a result, abundant infection of sugar beets and other cultivated hosts was widespread early in the season. A considerable portion of the acreage planted was abandoned due to curly top. In Idaho the disease "was more severe than it has ever been since plant disease records have been kept at the Experiment Station," according to Hungerford. A similar report was made by Dana for the Pacific Northwest. In the Twin Falls section in Idaho, plantings of common commercial sugar beets were a total loss. Loss estimates were received from only three States: 75 per cent in Oregon, where sugar beets are not a sugar crop, 10 to 20 per cent in Washington, and a trace in Montana. The yield per acre harvested as compared with last year may have some significance in this connection:

State	Short tons per acre		State	Short tons per acre	
	1933	1934		1933	1934
Ohio	7.8	8.4	Wyo.	11.4	9.9
Mich.	7.8	9.2	Colo.	12.6	8.9
Wis.	-	8.5	Utah	12.3	7.2
Nebr.	12.1	9.0	Calif.	15.0	14.5
Mont.	12.3	11.6	Other States	8.9	6.8
Idaho	11.2	8.5			

These figures are taken from U. S. Bur. Agr. Econ. Crops and Markets (vol. 11, no. 12, p. 480, Dec. 1934). Drought was certainly responsible for a large part of the reduction in yield, as evidenced by the figures for Nebraska where curly top does not occur, but it is likely that the disease was an active factor in the States where it occurred. (See also P.D.R. 18; 168, 173).

ROOT ROT (Phoma betae) caused losses estimated as follows: 2 per cent, Ohio, Michigan; 1, Montana; trace, Wisconsin, Minnesota. Corticium vagum was reported from Wisconsin, Minnesota, Wyoming and Colorado. The light incidence appeared to be correlated with the dry season.

LEAF SPOT (Cercospora beticola). Losses were reported as 1 per cent in Ohio and Minnesota, trace in Michigan, Wisconsin, Montana, none in Oregon. Low atmospheric humidity was unfavorable to its development.

DAMPING-OFF (various organisms) was reported from Minnesota as less prevalent than usual, due to the dry soil conditions.

NEMATODE (Heterodera schachtii), Wyoming.

DROUGHT caused a loss of 30 per cent in stand of sugar beets in Wisconsin.

DISEASES OF TREES

Special reports on tree diseases have been contributed to this Summary by members of the Division of Forest Pathology of the Bureau of Plant Industry, and a report on white pine blister rust has been furnished by the Bureau of Entomology and Plant Quarantine.

VERTICILLIUM WILT OF MAPLES: About the usual number of inquiries concerning Verticillium were received by the Washington office during the year 1934. On maples the disease appeared in more or less epidemic form in two localities. William R. Van Dersal, of the University of Pittsburgh, Pittsburgh, Pennsylvania, reported that the disease was becoming more prevalent than formerly in that city. In certain sections about 1 per cent of the trees, mostly Norway maples, were infected. In one block ten of the thirty maples were attacked. One tree of the Schwedleri variety was killed by wilt. An infection of fifteen to twenty trees, mostly Norway maples, was reported in Bergen County, New Jersey. The season there was dry and the top soil around these trees was very shallow. The characteristic green staining was noted in these trees. G. H. Hepting reported a mild epidemic of Verticillium wilt on maples at Asheville, North Carolina.

Accumulated evidence indicates that climatic factors exercise much influence on the development of Verticillium wilt of maples, but this may not always be the case. A number of sugar maples in West Virginia became infected with Verticillium, and inquiry revealed that the trees had been heavily manured, the roots had been disturbed by plowing, and roses (a host of Verticillium) had been planted in proximity to the trees, any one of which factors might have influenced infection. (Russell Clapper, Division of Forest Pathology).

CHESTNUT BLIGHT ON THE PACIFIC COAST: The first known infection of chestnut blight (Endothia parasitica) in the western United States was found at Gunter, Oregon, on two trees in 1929. These were cut and burned by State and Federal authorities. In the spring of 1934 J. L. Mielke of the Division of Forest Pathology found a small infection on a sprout that had grown from one of the originally infected trees and removed the sprout. When the planting at Gunter was visited in September, 1934, by Mielke and the writer, the chestnut-blight fungus was found on the stump about a foot below the ground. This stump was burned.

In Seattle, Washington, no blight infections have been reported since the removal of the infection that Dr. John W. Hotson found on American chestnut trees in 1932.

In the fall of 1934 the writer visited the Agricultural Experiment Station at Agassiz, British Columbia. One European chestnut infected with the blight was found. Another tree near it was healthy. No evidences of blight were noted on a number of other trees in and near Agassiz. The Dominion authorities have destroyed the infected tree.

In October, 1934, the writer discovered a blighted European chestnut tree in an orchard near Stockton, California. Cooperatively, the County Commissioner and his force, the State Plant Pathologist and his assistants, and members of the Division of Forest Pathology inspected the chestnut plantings and nurseries in California. No blight infections were found in other parts of the State, but in Stockton more than forty infected trees were found. Most of these occurred in one orchard. All infected trees found were eradicated by the State authorities. At Stockton the blight seemed to show greater virulence than it does on European chestnuts in the East. (G. F. Gravatt, Division of Forest Pathology).

ENDOCONIDIOPHORA FIMBRIATA ON SYCAMORE: Endoconidiophora fimbriata was isolated from stained areas in the trunk and limbs of a thirty-year-old dead sycamore in Washington, District of Columbia. This tree was one of a number which died recently in a street planting. The stained areas from which the fungus was isolated occupied about one-third of the circumference of the tree and extended radially nearly to its center; and it ran from the ground entirely up the trunk and into several lateral branches. (Bowen S. Crandall, Division of Forest Pathology).

STEREUM GAUSAPATUM ON OAK: In 1934 Stereum gausapatum was found to be one of the organisms causing a common type of decay in oak stands of some of the eastern States (Stereum gausapatum, cause of heart-rot of oaks. Phytopath. 24: 831-832. 1934). It has been obtained from living trees in North Carolina, West Virginia, Virginia, Pennsylvania, New Jersey, New York, and Connecticut. Most of the important oak species, such as Quercus prinus, Q. alba, Q. coccinea, Q. velutina, and Q. rubra, are susceptible. A few isolations from trees in a coppice growth indicated that a large percentage of damage was caused by this fungus and a more intensive study of butt rot of sprout oak stands was started. Ross W. Davidson, Division of Forest Pathology)

PHYTOPHTHORA PARASITICA ON BLACK LOCUST: Top wilt caused by Phytophthora parasitica caused heavy losses in seed beds of black locust at Charlottesville, Virginia, and Raleigh, North Carolina. Outbreaks of the disease appeared after heavy rains and seedlings less than a month old were attacked. (Bowen S. Crandall, Division of Forest Pathology)

WILLOW DISEASES IN 1934: The recent impetus given to soil erosion control and the use of willow species in this work have increased the importance of willows and their diseases. A survey was made during the summer of 1934 to find out what diseases were prevalent on willows and what damage they were doing.

WILLOW SCAB (Fusicladium saliciperdum). During the summer of 1934 willow scab was severe in the New England States and eastern New York. The disease occurred as far west as Ithaca, New York and Warren, Pennsylvania. Its present known distribution is New England, New York, northern Pennsylvania, and northern New Jersey, but its spread some hundreds of miles beyond its present limits is to be expected within the next decade.

BLACK CANKER (Physalospora miyabeana). During the summer of 1934 severe damage was observed on trees along streams in western Connecticut. It appears to follow the willow scab disease and to increase the damage already done by the scab fungus. The present known distribution of black canker is through New England and eastern New York. It does not appear to be spreading as rapidly as willow scab.

CYTOSPORA CANKER (Cytospora chrysosperma). This disease of willow has long been known in the United States. It affects other broadleaf trees besides willows. The disease is wideapread, but is most common and destructive in the Southwest and Midwest. It was especially severe in the Midwest during the season of 1934.

CANKER AND DIEBACK DISEASE. During the summer of 1934 a canker and dieback disease has occurred in numerous places through the Midwest and South. An undetermined fungus has been isolated in nearly all cases, but its pathogenicity has not been proved. (H. F. Winter, formerly Technician Emergency Conservation Work, Division of Forest Pathology)

DUTCH ELM DISEASE: During the year Ceratostomella ulmi was isolated from samples from 6,913 trees, or 40.9 per cent of the total specimens received at the Dutch Elm Disease Laboratory, Morristown, New Jersey. From the beginning of the work in Ohio in 1930 to January, 1935, 7,790 cases of the disease had been confirmed by the laboratory.

Investigation of the prevalence of C. ulmi in dead or approximately half dead elms in the New York-New Jersey area indicated that about 10 per cent of the trees falling within this class was infected. Available customs records showed that elm logs had entered several ports and had been shipped to a number of Midwest cities (P.D.R. 19: 11-14. 1935), including Indianapolis where the disease was found near veneer mills. A case of the disease was found near the docks at Norfolk, Virginia.

Considerable variation was noted in cultural characteristics of various isolants of the fungus. Some of the cultures resembled those of other species of Graphium and Ceratostomella isolated from discolored elm wood or bark.

The perfect stage of the fungus was produced on sterilized elm twigs by combining certain single spore strains. These strains did not produce perithecia when grown alone under similar conditions. Strains producing perithecia when combined have been isolated from trees in New York and New Jersey. (Curtis May, Division of Forest Pathology)

CEPHALOSPORIUM DIEBACK OF ELMS: Cephalosporium sp. was isolated from 28.2 per cent of the 16,921 specimens suspected of having the Dutch elm disease and submitted to the Dutch Elm Disease Laboratory, Morristown, New Jersey, for culturing. The specimens of Cephalosporium came from twenty States and Canada, from Oklahoma north to North Dakota and eastward to Virginia and Nova Scotia. The disease continues to be prevalent in native stands and planted elms throughout northeastern United States, causing much disfiguration and occasionally death of trees. (Gross, R. W., and P. R. Frink. Cephalosporium wilt and die-back of the white elm. Nebraska Agr. Exp. Sta. Res. Bul. 70. 1934). (A. F. Verrall, Emergency Conservation Work, Division of Forest Pathology)

ELM WILT CAUSED BY VERTICILLIUM: Verticillium sp. was isolated at the Dutch Elm Disease Laboratory from 3.8 per cent of the 16,921 samples of elm suspected of being affected with the Dutch elm disease. The specimens of Verticillium came from trees in twenty-four States and the District of Columbia, from Oregon and Colorado eastward to Maine and Tennessee. Some trees known to be affected in previous years showed no external symptoms of disease this year, but other trees continued to decline. (E. G. Kelsheimer, Emergency Conservation Work, Division of Forest Pathology)

PHYTOPHTHORA CINNAMOMI CAUSING TREE DISEASE: Phytophthora cinnamomi was found causing root and collar rot of three-year-old Norway spruce at Charlottesville, Virginia. A 2 per cent loss from this cause occurred. The same species continues to cause heavy losses on red pine at College Park and Branchville, Maryland, and on red oak at College Park. (Bowen S. Crandall, Division of Forest Pathology).

WHITE PINE BLISTER RUST IN 1934: During 1934, the spread of white pine blister rust (Cronartium ribicola) in the Eastern white pine regions was evidenced by the finding of the disease on white pine for the first time in Sussex and Passaic Counties, New Jersey; Allegany and Garrett Counties, Maryland; Pendleton County, West Virginia; Geauga County, Ohio; Dubuque County, Iowa; Becker County, Minnesota; Chippewa, Jackson, Marathon, Oneida, Adams, and Lincoln Counties, Wisconsin; and Ontonagon, Leelanau, Emmet, Otsego, Alcona, and Sanilac Counties, Michigan. Infection on Ribes was found for the first time in Nelson County, Virginia, and in Frederick and Montgomery Counties, Maryland.

In the West, a new pine infection center was located on Steamboat Creek, Douglas County, Oregon, about 100 miles from California, but scouting in the sugar pine forests of northern California failed to reveal the presence of the rust. In the western white pine region of northeastern Washington, northern Idaho, and northwestern Montana, 39 new centers of pine infection were reported, making a total of 129 for the region. All of these have developed within the last twelve years and there are undoubtedly many others still undiscovered. Of the 39 new centers, 8 were in northern Idaho and northeastern Washington on the Kaniksu National Forest; one on the Lolo National Forest; and 4 on the Cabinet National Forest in Montana. This is the first record of pine infection in Montana, and in these national forest units.

Careful inspection and study of numerous white pine areas show that very little new infection is occurring on white pines in those areas that have been brought under control by the eradication of Ribes, but in similar unprotected areas the rust is increasing rapidly and causing serious losses in white pine stands, particularly among the younger age classes. (Bureau of Entomology and Plant Quarantine).

HARDWOODS

ACER SPP. MAPLE: *Cytospora* sp. caused CANKER of Norway maple, *A. platanoides*, in New Jersey and Massachusetts, and was found in connection with the perfect stage *Valsa pauperata* on silver maple, *A. dasycarpum*, in Massachusetts. LEAF BLIGHT (*Gloeosporium* sp.) was severe in Virginia and was reported from Massachusetts on sugar maple, *A. saccharum*. ANTHRACNOSE (*G. apocryptum*) on Norway maple in New Jersey and Delaware. ANTHRACNOSE (*G. saccharini*), Connecticut. TWIG BLIGHT (*Nectria cinnabarina*) on Japanese maple, *A. palmatum*, Massachusetts. The conidial stage, *Tubercularia vulgaris*, occurred on Japanese maple and sycamore maple, *A. pseudoplatanus*, in Connecticut, probably following injury from other causes. CANKER (*Phomopsis* sp.) on Japanese maple in New Jersey. LEAF SPOT (*Phyllosticta minima*) on silver maple, Virginia. ROOT ROT (*Phymatotrichum omnivorum*), Texas, on maple and boxelder, *A. negundo*. TAR SPOT (*Rhytisma acerinum*), Connecticut, Michigan, Wisconsin. Silver maples in low swampy places were heavily infected in various parts of the Lower Peninsula of Michigan. TAR SPOT (*R. punctatum*) on mountain maple, *A. spicatum*, Massachusetts. CANKER (*Sphaeropsis* sp.), New Jersey, on Japanese maple.

WILT (*Verticillium* sp., reported as *V. alboatrum* in Ohio and *V. dahliae* in New Jersey) was said to be more evident than usual in Ohio and Connecticut while the normal amounts occurred in Michigan and Wisconsin. In New Jersey, the number of Norway maple trees attacked increases every year. Norway maple was affected in Connecticut also. Other maples mentioned specifically were Japanese maple in Connecticut and New Jersey, silver maple in Connecticut, and sugar maple in Massachusetts. (See also page 97).

LEAF SCORCH due to hot dry weather was said to be more common than usual on Norway and sugar maples in Ohio and was also reported from Connecticut. LEAF SPOT and MARGINAL NECROSIS due to frost injury, Washington. WINTER INJURY, Connecticut.

AESCULUS SPP. BUCKEYE, HORSE CHESTNUT: LEAF BLOTCH, (*Guignardia aesculi*) generally was widespread and about as prevalent as usual on horse chestnut. Connecticut and Michigan reported less due to dry hot weather. CANKER (*Nectria cinnabarina*), New Hampshire. LEAF BLIGHT due to frost injury, Washington. SLIME FLUX (undet.), New Jersey.

ALEURITES SPP.: THREAD BLIGHT (*Corticium stevensii*) on the tung-oil tree, *A. fordii*, in Florida. CANKER (*Nectria cinnabarina*), on *A. cordata* in Massachusetts.

ALNUS SP. ALDER: LEAF BLIGHT (*Botrytis cinerea*). Washington.

BETULA SPP. BIRCH: CANKER (Nectria galligena), Connecticut. WOOD DECAY (Polyporus sp.), New Jersey, on B. nigra.

CASTANEA SPP. CHESTNUT: BLIGHT (Endothia parasitica). See page 97. Connecticut reported that generally seedlings and sprouts looked better than usual, and a considerable number of burrs and nuts were found on the older ones. In New Jersey more root sprouts bear nuts every year, apparently.

CATALPA SPP. CATALPA: LEAF SPOT (Phyllosticta catalpae), New Jersey, on C. bungei.

CORNUS SPP. DOGWOOD: TWIG BLIGHT (Botrytis sp.), Washington. LEAF SPOT due to disturbed water relations, Washington.

CRATAEGUS SPP. HAWTHORN: BLIGHT (Bacillus amylovorus) on C. oxyacantha in Massachusetts and New Jersey.

LEAF AND FRUIT BLIGHT (Entomosporium maculatum), Connecticut. LEAF SPOT, (E. thuemenii), New Jersey, on C. oxyacantha. RUST (Gymnosporangium clavipes), New Jersey, on C. oxyacantha. RUST (G. globosum), Connecticut, on C. oxyacantha. RUST (G. juniperi-virginianae), Wisconsin.

HICORIA SPP. HICKORY, PIGNUT: LEAF SPOT (Marssonia juglandis) caused complete defoliation of some hickory trees in New Jersey.

LIRIODENDRON TULIPIFERA. TULIP TREE: ANTHRACNOSE (Gloeosporium liriodendri), New Jersey. LEAF SPOT (Phyllosticta liriodendrica), Massachusetts.

OSTRYA VIRGINIANA. HOPHORNBEAM, IRONWOOD: LEAF SPOT (Taphrina virginica, common in May on trees along rivers in Clarke County, Georgia.

PLATANUS SPP. PLANETREE, SYCAMORE: Endoconidiophora fimbriata, see page 98. ANTHRACNOSE (Gnomonia veneta) was generally less prevalent than usual on American planetree, P. occidentalis. It was widespread and caused considerable defoliation in Tennessee, and was destructive on trees in river bottoms in Arkansas. It was reported on sycamore from Washington. TWIG BLIGHT (Massaria platani). Reported on American planetree from Ohio, suspected as being a factor in twig death and fall.

POPULUS SPP. POPLAR, COTTONWOOD, ASPEN: LEAF BLIGHT (Cladosporium epiphyllum. Washington, on cottonwood. CANKER (Cytospora chrysosperma). Massachusetts on Bolleana poplar, P. bolleana; New Jersey, Ohio, Texas. CANKER (Dothichiza populea). Massachusetts, on Bolleana poplar; Wisconsin. LEAF SPOT (Marssonina sp.), Washington, on silver poplar. RUST (Melampsora occidentalis), Washington, on cottonwood.

QUERCUS SPP. OAK: STEM BLIGHT (Aleurodiscus acerinus), Texas, on live oak, Q. virginiana. ROOT ROT (Armillaria mellea), Massachusetts, New Jersey, Wisconsin. CROWN ROT (Corticium sp.), Texas, on live oak. DIEBACK (Diplodia longispora), New Jersey, on Q. montana. BROWN OAK (Fistulina hepatica), P. D. R. 19: 95. ANTHRACNOSE (Gnomonia veneta) was generally reported as less prevalent than usual; however, more was observed in Massachusetts. POWDERY MILDEW (Microsphaera alni), New Jersey, on Q. alba. LEAF SPOT (Phyllosticta sp.), New Jersey. ROOT ROT (Phytophthora cinnamomi, see page 10. HEART ROT (Polyporus graveolens, Georgia, on black oak, Q. velutina. ROT (P. sulphureus), Connecticut, on living black oak. TWIG CANKER (Sphaeropsis sp.), New Jersey. HEART ROT (Stereum gausapatum), see page 98. BLISTER (Taphrina coerulescens), New Jersey, Georgia, Mississippi, Texas. STEM BLIGHT (Trabutia erythrospora), Texas, on live oak. SLIME FLUX (undet.), New Jersey, on Q. alba and Q. rubra.

ROBINIA PSEUDOACACIA. BLACK LOCUST: TOP WILT (Phytophthora parasitica), see page 99. DAMPING-OFF (Rhizoctonia solani) affected about 75 per cent of the seedlings in a TVA nursery in Clinton County, Tennessee, in August. It caused severe defoliation and death of some plants. P.D.R. 18: 139. DIEBACK (nonpar.), Washington.

SALIX SPP. WILLOW: A report on Willow diseases is given on page 99. CANKER (Cytospora chrysosperma), on pussy willow, S. discolor, in New Jersey and Ohio; on weeping willow, S. babylonica, New Jersey; also reported from Wisconsin. See also page 99. SCAB (Fusicladium saliciperdum), see page 99. TWIG BLIGHT (Gloeosporium sp.) caused considerable dying of twigs in Delaware. LEAF SPOT (Marssonina sp.), Washington. BLACK CANKER (Physalospora miyabeana), see page 99.

SORBUS AMERICANA. MOUNTAIN ASH: BLIGHT (Bacillus amylovorus), New Jersey. TWIG BLIGHT (Phomopsis sp.), Massachusetts, killed 50 per cent of the twigs back from the tips.

TILIA AMERICANA. AMERICAN LINDEN: POWDERY MILDEW (Erysiphe sp.), New Jersey. CANKER (Nectria sp.), New Jersey.

ULMUS SPP. ELM: LIMB CANKER (Botryosphaeria ribis), Arkansas, on Chinese elm, U. parviflora. WILT AND DIEBACK (Cephalosporium sp.), see page 100. DUTCH ELM DISEASE (Ceratostomella ulmi), see page 99. Collybia velutipes, Connecticut. CANKER (Coniothyrium sp.), Illinois (P.D.R. 19: 14). CANKER (Cytosporina sp. ? ludibunda), Illinois (P.D.R. 19: 14). Fusarium sp., Connecticut. ANTHRACNOSE (Gnomonia ulmea) was much more prevalent in Connecticut than usual. New Jersey, Ohio, and Michigan reported it as doing little damage. CANKER (Macrophoma sp.), Pennsylvania. CANKER (Phoma sp.), Illinois

(P.D.R. 19:14). NURSERY BLIGHT (*Phomopsis* sp.), Massachusetts. *Pleurotus ulmarius*, Connecticut. *Polystictus conchifer*, Connecticut. CANKER AND DIEBACK (*Sphaeropsis ulmicola*), New Jersey, Wisconsin. WILT (*Verticillium* sp.), see page 35-36, 100. Reports were received from Massachusetts, Connecticut, New Jersey, Ohio.

CONIFERS

CHAMAECYPARIS THYOIDES. WHITE CEDAR: RUST (*Gymnosporangium ellisii*), New Jersey.

CUPRESSUS SPP. CYPRESS: WILT (undet.), caused death of many trees five to eighteen feet high in nurseries near Concord, Georgia, in July.

JUNIPERUS SPP. JUNIPER, RED CEDAR: RUST (*Gymnosporangium juniperi-virginianae*), on red cedar in Connecticut, New Jersey, Tennessee, Wisconsin, Minnesota, Kansas. There seemed to be fewer galls than usual probably due to the dry weather. Relative susceptibility of species and varieties of Juniperus as observed in a planting in Tennessee is reported in P.D.R. 18: 163. BLIGHT (*Phomopsis juniperovora*), New Jersey, on red cedar. LEAF CAST (undet.). Washington, on Juniper.

PICEA SPP. SPRUCE: ROOT AND COLLAR ROT (*Phytophthora cinnamomi*). See page 101.

PINUS SPP. PINE: WHITE PINE BLISTER RUST. See page 101. ROOT ROT (*Phytophthora cinnamomi*). See page 101. *Rhizina inflata* caused DYING of red pine seedlings in a nursery in Maryland. P.D.R. 19: 96.

TAXUS SPP. YEW: CANKER (*Phomopsis* sp.). New Jersey, on *T. hicksii*. WINTER INJURY. Species of Taxus suffered little damage in New Jersey.

THUJA SPP. ARBORVITAE: DYING, cause unknown. Many trees in Concord, Macon, and Augusta, Georgia, died during the summer from an unknown cause. No parasitic organism was found to be associated. WINTER INJURY was severe in Virginia.

TSUGA CANADENSIS. HEMLOCK: LEAF BLIGHT (*Keithia tsugae*), Massachusetts. RUST (*Melampsora abietis-canadensis*) Massachusetts. TWIG BLIGHT (*Phomopsis* sp.), New Jersey.

DISEASES OF ORNAMENTALS

ACONITUM SP. MONKSHOOD: STEM ROT (*Rhizoctonia solani*), New Jersey. CROWN ROT (*Sclerotium delphinii*), New Jersey. WILT (*Verticillium* sp.), Massachusetts.

ALTHAEA ROSEA. HOLLYHOCK: LEAF SPOT (*Cercospora althaeina*), Connecticut, New York. ANTHRACNOSE (*Colletotrichum* sp.), New Jersey. LEAF SPOT (*Phyllosticta* sp.), New Jersey. RUST (*Puccinia malvacearum*) was widely reported. It was said to be less abundant than usual in Connecticut and New York, and much less prevalent in Michigan and Wisconsin. Georgia noted complete destruction of the host in gardens.

ALYSSUM SPP. ALYSSUM: ROOT ROT (*Rhizoctonia* sp.), New York.

AMELANCHIER SP. JUNEBERRY: BLIGHT (*Bacillus amylovorus*), Montana, on *A. alnifolia*.

AMYGDALUS SP. FLOWERING PEACH: LEAF CURL (*Exoascus deformans*) was serious in May on the University campus and in gardens at Athens, Georgia.

ANTIRRHINUM MAJUS. SNAPDRAGON. ANTHRACNOSE (*Colletotrichum antirrhini*), New York and Mississippi. STEM ROT OR CANKER (*Fusarium* sp.) occurred on the varieties Cheviot Maid and Sun Tan in the College greenhouse at Athens, Georgia. The lesions girdle the stem and the branch dies. ROOTKNOT (*Heterodera marioni*), Mississippi. STEM CANKER (*Phyllosticta antirrhini*), Washington. RUST (*Puccinia antirrhini*) was widespread and generally about as prevalent as usual. Reports came from Massachusetts, New Jersey, Pennsylvania, Virginia, Georgia, Mississippi, Wisconsin, Minnesota, Kansas, Colorado, and Washington. STEM ROT (*Sclerotinia sclerotiorum*) caused from 20 to 30 per cent loss in an extensive planting in one greenhouse in Michigan. The loss for the State was 2 per cent. WILT (*Verticillium* sp.), New Jersey.

ARISTOLOCHIA SP.: LEAF SPOT (*Phyllosticta aristolochiae*), New Jersey.

ASPARAGUS ASPARAGOIDES. SMILAX ASPARAGUS. CANKER AND LEAF SPOT (*Fusarium* sp.) ruined several houses of smilax in New Jersey.

ASTER FRIKARTI. ASTER: RUST (*Coleosporium solidaginis*), Connecticut.

AUCUBA JAPONICA AUREA. JAPANESE AUCUBA: LEAF SPOT (*Colletotrichum pollacii*), New Jersey. LEAF SPOT (*Pestalotia aucubae*), New Jersey.

AZALEA SPP. AZALEA. (See also Rhododendron): BLIGHT (Botrytis, cinerea type) on A. pontica in New Jersey. LEAF HYPERTROPHY (Exobasidium sp.), Washington. E. vaccinii caused GALLS on A. hinodegiri and A. indica and LEAF SPOT on A. pontica in New Jersey. WILT, (Fusarium sp), New Jersey. POWDERY MILDEW (Microsphaera alni), New Jersey. STEM CANKER (Phomopsis sp.), Massachusetts. LEAF SCORCH (Septoria azaleae) on A. indica and A. hinodegiri in New Jersey. BUD BLIGHT (Sporocybe azaleae), Massachusetts. STEM BLIGHT (Verticillium sp.), Massachusetts. FLOWER SPOT (undetermined fungus) was again prevalent in several public gardens and nurseries in the vicinity of Charleston, South Carolina.

BEGONIA SPP. BEGONIA: NEMATODE LEAF SPOT (Aphelenchoides fragariae, New Jersey. LEAF BLIGHT (Botrytis sp.), New York, New Jersey. LEAF SPOT (Phyllosticta sp.), New Jersey. CORKY OUTGROWTH on the leaves (non-parasitic), Pennsylvania.

BERBERIS THUNBERGII. JAPANESE BARBERRY: BACTERIAL LEAF SPOT, New Jersey. WILT (Verticillium sp.), New York and New Jersey.

BUXUS SPP. BOX: LEAF SPOT (Macrophoma candollei), Massachusetts and Mississippi. LEAF BLIGHT AND CANKER (Nectria rousseliana (Volutella buxi)), Massachusetts, Georgia, Mississippi. LEAF SPOT (Phoma sp.), New Jersey. WINTER INJURY, severe in New Jersey and Virginia.

BUXUS SEMPERVIRENS SUFFRUTICOSA. DWARF BOX: LEAF SPOT (Macrophoma candollei), New Jersey. LEAF BLIGHT AND CANKER, (Nectria rousseliana), New Jersey.

CALENDULA OFFICINALIS. CALENDULA. (POT MARIGOLD): POWDERY MILDEW (Oidium sp.). A severe outbreak occurred in New York. Previously it had been rare in that State. STEM ROT (Rhizoctonia solani), New Jersey. YELLOWS (virus), Connecticut and New York.

CALLISTEPHUS CHINENSIS. CHINA ASTER. RUST (Coleosporium solidaginis) was serious in up-State New York. Excellent control with sulphur dust was reported. In Michigan, rust was destructive in cloth houses where the overhead sprinkling system was used, but was not important on asters grown outdoors. Other States reporting the occurrence of aster rust were Connecticut, New Jersey, Arkansas, Ohio, and Wisconsin.

WILT (Fusarium sp.), Washington. WILT (F. conglutinans callistephi). For the first time in several seasons wilt was more important than yellows in Michigan, and in Wisconsin also there was much more than usual. Hot weather favored the development of the disease in both States. In Minnesota, on the other hand, scarcely any reports of either wilt or yellows were received. Wilt-resistant varieties were used extensively. According to L. R. Jones, a strain of the wilt organism found in Indiana is pathogenic to aster selections that are resistant in other parts of the country where they have been tested. Connecticut, New York, New Jersey, Ohio, and North Dakota noted about the usual prevalence.

STEM CANKER (Phomopsis callistephi), Wisconsin. STEM ROT (Rhizoctonia solani), Connecticut and New Jersey. WILT (Verticillium sp.), Massachusetts.

YELLOWS (virus) was more prevalent than usual in New York, perhaps due to the abundance of the insect vector. Exactly the opposite condition in both respects was reported from Michigan. New York, Wisconsin, and Minnesota reported that growers have been using cloth tents successfully. Connecticut, New Jersey, Ohio, and Washington reported about the usual prevalence.

CAMELLIA JAPONICA. CAMELLIA: BRANCH DIE-BACK (Gloeosporium sp.) was reported in Georgia. In nurseries and private gardens at Thomasville 10 to 20 per cent infection was observed. The disease occurred in Savannah also. LEAF SPOT (Hendersonia subalbicans), Georgia. LEAF SPOT (Monochaetia camelliae), Georgia. LEAF SPOT (Pestalotia guepini), New Jersey and Mississippi.

CAMPANULA MEDIUM. CANTERBURY BELLS: STEM ROT (Rhizoctonia solani), Connecticut, new host for the State.

CANNA INDICA. CANNA: BACTERIAL BUD ROT (Bacterium cannae), Mississippi.

CATTLEYA SP.: RUST (Uredo behnickiana P. Henn.) occurred on imported plants in one greenhouse in New Jersey. There was less than 1 per cent infection.

CELOSIA SP. COCKSCOMB: A LEAF SPOT was severe in one field at Camden, New Jersey. Isolations yielded both Alternaria and Phyllosticta.

CENTAUREA CYANUS. CORNFLOWER: ROOT ROT (Rhizoctonia sp.) caused severe loss in a commercial planting for cut flowers in Nassau County, New York.

CHRYSANTHEMUM HORTORUM. CHRYSANTHEMUM: LEAF NEMATODE (Aphelenchoides fragariae (A. ritzema-bosi)), was reported for the first time from Connecticut where it was serious on the variety Mercury in one nursery. It was more prevalent than usual in southern New York and was rather serious on Long Island where wet weather favored its spread in outdoor plantings. The variety Majestic was very resistant and Yellow Pockett, White Pockett, and

Bronze Pockett very susceptible. The nematode was also reported from Washington.

LEAF SPOT (*Cylindrosporium chrysanthemi*), Connecticut. POWDERY MILDEW (*Erysiphe cichoracearum*), New York, New Jersey, and Pennsylvania. STEM ROT (*Fusarium* sp.), New Jersey.

RUST (*Puccinia chrysanthemi*). A severe outbreak occurred on chrysanthemums, both out-of-doors and under glass, in southern New York. The varieties Early Frost, Indianola, Marie de Petris, and Rose Chocard were said to be very resistant, while Ambassador, Mrs. H. E. Kidder, Uvalda, Nubian, and Silver Sheen were very susceptible.

LEAF SPOT (*Septoria* sp.), Washington. LEAF SPOT (*S. chrysanthemella*), New York and New Jersey. WILT (*Verticillium* sp.), New Jersey and Washington. YELLOWS (virus), Connecticut, new to the State. CRACK-NECK (non-parasitic), Washington.

CHRYSANTHEMUM LEUCANTHEMUM. OX-EYE DAISY: STEM NEMATODE (*Anguillulina dipsaci*) was found on this new host on Long Island.

CIBOTIUM SCHIEDEI. TREE FERN: BLIGHT (*Pestalotia cibotii*), New Jersey.

CITRUS SP.: FRUIT ROT (*Penicillium glaucum*) occurred on a potted ornamental orange in Massachusetts.

CITRUS TAITENSIS. TAHITI ORANGE: WITHER TIP (*Colletotrichum gloeosporioides*), New Jersey.

CLEMATIS SPP. CLEMATIS: LEAF AND STEM BLIGHT (*Ascochyta clematidina*) seems to be on the increase in New York. RUST (*Puccinia rubigo-vera*), New York.

COLEUS SPP. COLEUS: BACTERIAL LEAF SPOT was reported from New Jersey.

COTONEASTER SPP. COTONEASTER: BLIGHT (*Bacillus amylovorus*) occurred in New Jersey and was said to be destructive in Georgia. SCAB (*Venturia* sp.), Washington.

CYCLAMEN PERSICUM (C. indicum). PERSIAN CYCLAMEN: BLIGHT (*Botrytis* sp.), New Jersey. STUNT (*Cladosporium cyclaminis*), New Jersey.

DAHLIA SPP. DAHLIA: WILT (*Bacterium solanacearum*) was observed in a planting in Michigan. BUD ROT (*Botrytis* sp.), New Jersey. POWDERY MILDEW (*Erysiphe polygoni*), New Jersey and Mississippi.

LEAF BLIGHT (*Macrosporium* sp.), Mississippi. MOSAIC (virus) caused about 50 per cent loss in Michigan where it was the most important disease in most plantings. Other States reporting its presence were Connecticut, New Jersey and Wisconsin. RING SPOT (virus) was observed rather generally in a collection of about one hundred varieties in Michigan. LEAF CRINKLING AND NECROSIS due possibly to frost, Washington.

DAPHNE SP. DAPHNE: *Rhizoctonia* sp. was reported as the cause of a WET STEM ROT and WILT in Orleans County, New York.

DELPHINIUM SPP. LARKSPUR: BACTERIAL LEAF SPOT or black spot (*Bacterium delphinii*) seemed to be less prevalent than usual. It was reported from Massachusetts, Connecticut, New York, New Jersey, Mississippi, Wisconsin, and Washington. BLIGHT (*Botrytis* sp.) was much less prevalent in Wisconsin due to dry weather. POWDERY MILDEW (*Erysiphe polygoni*), Massachusetts, New York, and Washington. ROOT ROT (*Sclerotinia sclerotiorum*), Massachusetts. CROWN ROT (*Sclerotium delphinii*) caused 50 per cent infection in one planting in Pennsylvania. The loss for the State was 5 per cent. Other States reporting its presence were Connecticut, New York, New Jersey, Mississippi, and Arkansas. STUNT (virus), New York and Washington.

DIANTHUS CARYOPHYLLUS. CARNATION: LEAF SPOT (*Alternaria* sp.) seemed to be more prevalent and serious than usual in New York and was reported from Massachusetts, New Jersey and Delaware. BACTERIAL LEAF SPOT (*Bacterium woodsii*), Massachusetts, New Jersey. BLIGHT (*Botrytis* sp.), New Jersey. SCAB (*Cladosporium herbarum nodosum*) affected 50 per cent of the plants in some greenhouses in Georgia. WILT (*Fusarium dianthi*), Washington. FAIRY RING (*Heterosporium echinulatum*), Washington. STEM ROT (*Rhizoctonia* sp.), Massachusetts, Kansas. BUD BLIGHT (*Sporotrichum poae*), New Jersey and Kansas. RUST (*Uromyces caryophyllinus*) seemed to be prevalent in greenhouses, but was controlled with proper practices. Ivory, Enchantress, Aviator, and Spectrum were reported to be resistant in Georgia, while Joy and Del Ray were very susceptible. WILT (*Verticillium dahliae*), New Jersey.

DIGITALIS PURPUREA. COMMON FOXGLOVE: STEM ROT (*Rhizoctonia solani*), New Jersey.

ECHINOPS SP. GLOBETHISTLE: CROWN ROT (*Sclerotium delphinii*), Connecticut.

ELAEAGNUS SP. ELAEAGNUS: CROWN GALL (*Bacterium tumefaciens*), Georgia.

ERIGERON SP. FLEABANE: WILT (*Verticillium* sp.), Massachusetts.

EUONYMUS SPP. EUONYMUS: LEAF SPOT (*Cercospora destructiva*), Arkansas. POWDERY MILDEW (*Oidium euonymi-japonici*), Louisiana.

EUONYMUS JAPONICUS. EVERGREEN BURNINGBUSH: LEAF SPOT (*Exosporium concentricum*), Mississippi. POWDERY MILDEW (*Oidium euonymi-japonici*), Mississippi. LEAF SPOT (*Septoria euonymi*), Mississippi.

FARFUGIUM GRANDE (*Ligularia kaempferi aureomaculata*). *LEOPARD PLANT:* LEAF SPOT (*Gloeosporium* sp.), Ohio.

FREESIA SPP. FREESIA: SCAB (*Fusarium* sp.) sometimes causes 100 per cent loss of freesias forced under glass, in New York. Golden Daffodil and Golden Treasure are resistant, whereas Purity is very susceptible.

GARDENIA FLORIDA. CAPE-JASMINE: ROOTKNOT (*Heterodera marioni*), New Jersey. CANKER (*Phomopsis* sp.), Massachusetts and New Jersey. LEAF AND BUD DROP (non-parasitic), Washington.

GERBERA JAMESONI. FLAME-RAY GERBERA: LEAF SPOT (*Botrytis, cinerea* type), New York. DIE-BACK of flower stems (*Gloeosporium* sp.), New York.

GLADIOLUS SP. GLADIOLUS: BACTERIAL BLIGHT (*Bacterium gummisudans*), Wisconsin and Minnesota. SCAB (*Bacterium marginatum*) caused 4 per cent loss in Massachusetts; 75 per cent infection and death in two gardens in Athens, Georgia; and also occurred in New York, New Jersey, Ohio, and Washington. CORM ROT (*Fusarium* sp.), Massachusetts, Mississippi, Wisconsin. CORM ROT (*Penicillium gladioli*), Massachusetts, New Jersey, Wisconsin. DRY ROT (*Sclerotinia gladioli*), New Jersey. HARD ROT (*Septoria gladioli*), New Jersey, Mississippi, Wisconsin. CRACK NECK (non-parasitic), Washington.

GYPSOPHILA PANICULATA. BABYSBREATH: CROWN, STEM, AND ROOT GALLS (*Bacterium gypsophilae*), Eastern United States.

HEDERA HELIX. ENGLISH IVY: BACTERIAL LEAF SPOT (*Bacterium hederae*), New Jersey, Ohio, Missouri. LEAF SPOT (*Phyllosticta concentrica*), Massachusetts, the District of Columbia, and Washington.

HELICHRYSUM SPP. EVERLASTING: YELLOWS (virus), New York.

HIPPEASTRUM SP. AMARYLLIS: *Stagonospora curtisii* was found on greenhouse or house plants from several sources, including New York, Ohio, Illinois, and South Carolina.

HYACINTHUS SPP. HYACINTH: ROOT ROT was reported from New Jersey. The affected roots had a glassy appearance. A Phytophthora was isolated.

HYDRANGEA SPP. HYDRANGEA: LEAF SPOT (*Cercospora* sp.), Delaware. POWDERY MILDEW (*Oidium* sp.), New Jersey. LEAF SPOT (*Phyllosticta hydrangeae*), New Hampshire and Georgia.

ILEX SPP. HOLLY: LEAF SPOT (*Phyllosticta* sp.) on *I. opaca* in New Jersey. ALGAL LEAF SPOT (*Pleurococcus* sp.), Washington. NON-PARASITIC LEAF SPOT, Washington.

IRIS SPP. IRIS: BACTERIAL SOFT ROT (*Bacillus carotovorus*) was reported as occurring in the usual amounts or less in New York, New Jersey, Georgia, Mississippi, and Wisconsin. In Minnesota there was more than usual.

CROWN ROT (*Botrytis* sp.), Washington. CROWN ROT (*Botrytis convoluta*) was reported for the first time from Minnesota where it was very severe on about 100 varieties grown in the vicinity of St. Paul. (P.D.R. 18: 103, 19: 7-9).

LEAF SPOT (*Didymellina iridis*, *D. macrospora* (*Heterosporium gracile*)) was reported generally as being less prevalent than in the last few years. Reports were received from Massachusetts, Connecticut, Wisconsin, Kansas, Washington, and Oregon. According to F. P. McWhorter, an exceptionally severe outbreak of "fire" occurred in Oregon and Washington on *Iris xiphium* and *I. tingitana* hybrids (Dutch and Spanish iris), in early March, 1934, following several weeks of unseasonably warm weather in February. The foliage was entirely killed to the ground in some cases, including several large, exceptionally well-managed plantings. The only fungus consistently associated with the disease, and proved by inoculation experiments to be pathogenic to both German (rhizomatous) and Dutch (bulbous) irises was *Heterosporium gracile*. This was subsequently shown to be the conidial stage of *Didymellina macrospora* Klebahn.

LEAF SPOT (*Macrosporium* sp.), Washington. NEMATODES in bulbs, Washington. BULB ROT (*Penicillium* sp.), Washington. RUST (*Puccinia iridis*) was more prevalent in Mississippi than usual. CROWN ROT (*Sclerotium delphinii*) on *I. xiphium* was observed in Connecticut for the first time. MOSAIC (virus) was reported from New York (on German iris), and from Washington.

KALANCHOE COCCINEA. KALANCHOE: POWDERY MILDEW (*Sphaerotheca* sp.). Plants in greenhouses at New Brunswick, New Jersey, suffered from a very severe attack. ROOT ROT (*Thielavia basicola*), District of Columbia. A WILT occurred in Camden County, New Jersey. *Fusarium* sp. and *Phytophthora* sp. were isolated from brown bundles in the stems.

KALMIA SPP. KALMIA, MOUNTAIN-LAUREL: LEAF SPOT (Cercospora kalmiae) caused heavy defoliation in Delaware. LEAF SPOT (Mycosphaerella colorata), Connecticut. BLIGHT (Phomopsis kalmiae), Massachusetts; and on K. latifolia in New York and New Jersey. LEAF SPOT (Phyllosticta kalmicola) on K. latifolia in New Jersey.

KERRIA JAPONICA. KERRIA: BLIGHT (Phoma japonica) was common in Cincinnati, Ohio, associated with dying back of the shoots following winter injury.

LABURNUM VULGARE (L. anagyroides). GOLDENCHAIN: CANKER (Fusarium lateritium (Gibberella baccata)) was reported from New Jersey.

LAGERSTROEMIA SP. CRAPEMYRTLE: POWDERY MILDEW (Erysiphe lagerstroemiae), Florida. SOOTY MOLD (Fumago sp.), District of Columbia on L. indica.

LATHYRUS ODORATUS. SWEET PEA: STREAK (Bacillus lathyri) was severe in a greenhouse at Athens, Georgia. WHITE BLIGHT (Cladosporium album) caused a total loss in one greenhouse in New Jersey where it first appeared two years ago. It was reported from Massachusetts also. POWDERY MILDEW (Erysiphe polygoni), Georgia and Louisiana. ROOT ROT (Fusarium sp.), New York. ANTHRACNOSE (Glomerella cingulata), was very severe in the vicinity of Baton Rouge, Louisiana. Blossom infection was conspicuous. It was also observed in Mississippi. FASCIATION (? bacterial), New York. MOSAIC (virus), Kansas.

LEUCOTHOE CATESBAEI. DROOPING LEUCOTHOE: LEAF SPOT (Pestalotia leucothoe), New Jersey.

LIATRIS SP. GAYFEATHER: WILT (Verticillium alboatrum), New Jersey.

LIGUSTRUM SPP. PRIVET: NEMATODE (Aphelenchoides fragariae) was found in stem galls on plants in the District of Columbia. WINTER KILLING was severe in Massachusetts, Rhode Island, Connecticut, New Jersey, and Virginia.

LILIUM SPP. LILY: NEMATODE, Aphelenchoides fragariae, in buds of the Takasago lily, California. (P. D. R. 18: 100). SOFT ROT (Bacillus carotovorus) was reported from Massachusetts, and on Easter Lily, L. Longiflorum, from Georgia.

STEM ROT (Botrytis sp.) was much less prevalent in Wisconsin, due to hot dry weather. BLIGHT (Botrytis elliptica) occurred generally in New York in about the usual amount. One serious outbreak caused complete loss in a commercial range of the Madonna lily, L. candidum.

A nearby crop of Easter lily was saved by sanitation and spraying with Bordeaux mixture. (C. Guterman). Botrytis blight was reported from Pennsylvania on Madonna lily, and from Virginia.

STEM ROT (Phytophthora sp.), much less than usual in Wisconsin. ROOT ROT (Phytophthora cactorum) was reported from New Jersey on the regal lily, L. regale. LIMBER NECK, due in part to this organism, occurred in the District of Columbia. STEM ROT (Sclerotium delphinii), New Jersey on the regal lily.

MOSAIC (virus) was prevalent on bulbs of Easter lily and L. speciosum forced by florists in New York. It was present wherever Easter lilies are grown in Louisiana. In the Buras section, where lily bulbs are grown commercially, it was very severe. About 50 per cent of the plants were affected. Mosaic was reported from Florida on Easter lily, and from New Jersey, Mississippi, and Wisconsin.

PIMPLE LEAF (undetermined), New Jersey. WINTER INJURY. Many bulbs of the Madonna lily were killed in the northern part of New York due to the extreme cold of the winter of 1933-34. Most of the plants made poor growth and failed to flower. The foliage was yellow with a purple cast. (C. Guterman).

LOBELIA SP. LOBELIA: STEM ROT (Sclerotium delphinii), New Jersey.

LUPINUS SPP. LUPINE: POWDERY MILDEW (Microsphaera sp.), New Jersey. CHARCOAL ROT (Rhizoctonia bataticola) on L. mutabilis in California. STEM ROT (Rhizoctonia solani), Connecticut.

LYCIUM SP. MATRIMONY VINE: POWDERY MILDEW (Sphaerotheca sp.) Washington.

MAHONIA AQUIFOLIUM. OREGON HOLLYGRAPE: LEAF SPOT (Phyllosticta sp.), New Jersey.

MALUS SPP. FLOWERING CRAB: RUST (Gymnosporangium juniperi-virginianae) was reported from Connecticut on M. ioensis, and from New Jersey, Tennessee, and Georgia. In Athens, Georgia, trees were almost completely defoliated during July. The percentages of infection of various species of Malus in a planting in Knox County, Tennessee, have been recorded in the Reporter (18: 162.).

MATTHIOLA INCANA. COMMON STOCK: ROOT ROT (Corticium vagum), Mississippi.

MYOSOTIS SP. FORGET-ME-NOT: CHLOROSIS. A mild chlorosis, of unknown cause, resembling a mosaic, affected plants in a greenhouse at Athens, Georgia.

NARCISSUS SPP. BULB NEMATODE (*Anguillulina dipsaci*), Washington. SMOLDER (*Botrytis narcissicola*), Washington. FIRE (*Botrytis polyblastis*). The fire disease, which had not been observed in this country previously, appeared in Washington in a limited area in the Puyallup Valley and at Bellingham. The foliage of affected plants was entirely destroyed. A full report of the outbreak is given in the Reporter (18: 51-53). BASAL ROT (*Fusarium* sp.) was less prevalent than usual in Wisconsin due to dry weather. BLIGHT (*Ramularia vallisumbrosae*), Washington. SOFT ROT (*Rhizopus* sp.), Washington. SCALE-SPECK FUNGUS (*Sclerotium* sp.), Washington. LEAF SCORCH (*Stagonospora curtisii*), Washington. MOSAIC (virus) occurred in New York and New Jersey. COLD WEATHER INJURY was reported from Mississippi.

NERINE SARNIENSIS. GUERNSEY-LILY: LEAF SCORCH (*Stagonospora curtisii*), North Carolina.

OENOTHERA SP. EVENING PRIMROSE: POWDERY MILDEW (*Oidium* sp.), New Jersey.

OXALIS SP. OXALIS: RUST (*Puccinia sorghi*), Mississippi.

PAEONIA SPP. PEONY: BLIGHT (*Botrytis paeoniae*) was said to be more prevalent in Massachusetts than usual. In most of the other States reporting it, including New York, New Jersey, Wisconsin, and Minnesota, it caused less damage than usual due to dry weather. Ohio reported about the usual amount. LEAF MOLD (*Cladosporium herbarum*) killed most of the leaves of peonies in a garden in Atlanta, Georgia, in June. LEAF SPOT (*Cladosporium paeoniae*) was less prevalent than usual in Wisconsin due to dry weather. ROOT KNOT (*Heterodera marioni*), Wisconsin. BLIGHT (*Phytophthora cactorum*). Dry weather inhibited the development of this disease in Wisconsin and Minnesota. SOUTHERN BLIGHT (*Sclerotium rolfsii*), Mississippi. RING SPOT (virus), Wisconsin.

PELARGONIUM SPP. GERANIUM: LEAF SPOT (*Alternaria* sp.), New Jersey. BLIGHT (*Bacterium* sp.), New Jersey. BACTERIAL LEAF SPOT (*Bacterium erodii*), Connecticut. Severe outbreaks of BLIGHT due to *Botrytis*, *cinerea* type occurred in several greenhouses in Massachusetts. It was also reported from New Jersey. CUTTING ROT due to *Pythium* sp., *Rhizoctonia* sp., and *Botrytis cinerea* is a serious disease which causes considerable loss to commercial florists in New York. BLACK LEG (*Pythium* sp.) was reported from New Jersey. LEAF SPOT MOTTLE, apparently due to a virus, which may be the same as the Kräuselkrankheit of Germany, was reported from Washington.

PENSTEMON SPP.: CROWN ROT (*Sclerotium delphinii*), New Jersey.

PETUNIA HYBRIDA. PETUNIA: DAMPING-OFF (*Rhizoctonia solani*), New Jersey. MOSAIC (virus), less than usual in Kansas.

PHLOX SPP. PHLOX: POWDERY MILDEW (Erysiphe cichoracearum) was reported from Massachusetts, Connecticut, New York, and New Jersey. RUST (Puccinia plumbaria = Aecidium giliae), Washington. CROWN ROT (Sclerotium delphinii), New Jersey. POWDERY MILDEW (Sphaerotheca pannosa), Washington. WILT (Verticillium sp.), New York.

PHYSOSTEGIA SP. FALSE DRAGONHEAD: CROWN ROT (Sclerotium delphinii), New Jersey.

PODOPHYLLUM PELTATUM. COMMON MAYAPPLE: RUST (Puccinia podophylli), New Jersey.

PYRACANTHA LALANDI. FIRETHORN: BLIGHT (Bacillus amylovorus) in nurseries in Georgia. SCAB (Venturia pyrina pyracanthae), as much as 50 per cent fruit infection was observed in various nurseries in Georgia.

RHODODENDRON SPP. RHODODENDRON. (See also Azalea): New Jersey reported BRANCH BLIGHT (Cytospora sp.), LEAF SPOT (Exobasidium vaccinii) and WHITE LEAF (E. vaccinii-uliginosi) on R. catawbiense, LEAF SPOT (Pestalotia macrotricha), BLIGHT (Phytophthora cactorum), WILT (P. cinnamomi), RUST (Pucciniastrum myrtilli) on R. catawbiense, and LEAF SPOT (Sphaeropsis sp.). WINTER INJURY was severe in Massachusetts.

ROSA SPP. ROSE: CROWN GALL (Bacterium tumefaciens) was less prevalent than usual in Kansas and Wisconsin. In Florida a large proportion of the rose plants dug show crown galls, but they are usually not so situated nor of sufficient size as to cause serious injury. New Jersey and Washington also reported the disease.

CANKERS. BRAND CANKER (Coniothyrium wernsdorffiae) was reported from Mississippi. CANKERS due to Coryneum microstictum and Cryptosporium minimum occurred in Oregon, and to the latter fungus in Pennsylvania also. CROWN CANKER (Cylindrocladium scoparium), New Jersey. BROWN CANKER (Diaporthe umbrina), Massachusetts, New Jersey, Georgia, Mississippi, and Ohio. CANE BLIGHT or CANKER due to Leptosphaeria coniothyrium (Coniothyrium fuckelii) was of moderate importance in Massachusetts, New Jersey, Virginia, Mississippi, and Ohio. CANKER (Tubercularia sp.), in a garden in Maryland.

BLACK SPOT (Diplocarpon rosae) was generally reported as an important disease. Massachusetts reported more than usual. Ohio and Kansas noted less. Twelve States reporting on its prevalence observed about the normal amount. They are New York, New Jersey, the District of Columbia, Tennessee, Georgia, Florida, Mississippi, Louisiana, Arkansas, Wisconsin, Montana, and Washington.

POWDERY MILDEW (Sphaerotheca humuli) was reported as being widespread, but apparently was generally less prevalent than normal as indicated by the following notes: New York, Wisconsin, Kansas, less than usual due to dry weather. Florida, lack of any continuous rainy period and the prevailing rapid air movements probably account in part for the decreased prevalence. The other States reporting its presence are Connecticut, New Jersey, the District of Columbia, Georgia, Mississippi, Arkansas, Ohio, Colorado, and Washington.

DIE-BACK due to various causes, including defoliation from leaf diseases, under-watering during dry seasons, and infections of roots and canes, was very general and important in Florida.

OTHER DISEASES. BUD BLIGHT (Botrytis, cinerea type) caused considerable injury on the buds and young leaves of the Talisman variety in a large forcing house in Michigan. The attack was associated with high humidity and soft growth. The fungus was recorded on rose from Washington also. LEAF SPOT (Cercospora rosicola) was serious on all varieties grown in northern Georgia and occurred in Mississippi also. MUSHROOM ROOT ROT (Clitocybe tabescens) was found frequently in Florida. ROOT-KNOT (Heterodera marioni) is an important disease in Florida. The favorable moisture and temperature and the sandy soils appear to favor its development throughout the year. Cherokee and Texas dog rose are said to be resistant, while R. multiflora, Texas wax rose, and others are susceptible. RUST (Phragmidium sp.), less prevalent than usual in Wisconsin, due to dry weather; also reported from Washington. LEAF SPOT (Phyllosticta sp.), New Jersey. ANTHRACNOSE (Sphaceloma rosarum), Oregon. MOSAIC (virus) was more prevalent than usual in Michigan. In one shipment from California consisting of 20,000 plants about 3 to 5 per cent were affected. In New Jersey, mosaic was observed on Mary Scott roses budded in California. FASCIATION (undetermined), Connecticut. WINTER INJURY was severe in Connecticut, New York, New Jersey, and Virginia.

SEMPERVIVUM SPP. HOUSELEEK, HEN-AND-CHICKENS: LEAF RUST (Endophyllum sempervivi) occurred on a large number of plants of S. tectorum grown in cold-frames by a florist on Staten Island, New York. In a nursery in Iowa a SOFT ROT of unknown origin caused death of the fleshy leaves of the central body, leaving the surrounding buds. Rhizopus sp. was commonly associated.

SENECIO CRUENTUS. CINERARIA: STEM ROT (Sclerotinia sclerotiorum) and WILT (Verticillium sp.) were reported from Washington.

SINNINGIA SPECIOSA. GLOXINIA: STEM ROT (Sclerotinia sclerotiorum), Washington.

SOLIDAGO SPP. GOLDENROD: RUST (Coleosporium solidaginis), common on wild goldenrod in Connecticut. TAR SPOT (Rhytisma solidaginis), New Jersey.

SYMPHORICARPOS SPP. SNOWBERRY: FRUIT ROT (Alternaria sp.), Connecticut. ANTHRACNOSE (Glomerella cingulata) was important in Massachusetts, while in Wisconsin it was less prevalent than usual due to dry weather.

SYRINGA SPP. LILAC: BACTERIAL BLIGHT (Bacterium syringae) was reported from New Jersey, Georgia, and Washington. LEAF BLIGHT (Botrytis cinerea), Washington. LEAF SPOT (Cercospora lilacis), Mississippi. ANTHRACNOSE (Gloeosporium syringae), Connecticut. LEAF SPOT (Phoma sp.), Wisconsin. BLIGHT (Phytophthora cactorum), New Jersey. GRAFT BLIGHT due to uncongenial stock, Massachusetts and Connecticut.

TAGETES SPP. MARIGOLD: A rather severe case of WILT was observed in a commercial planting in Nassau County, New York. Fusarium sp. was the only fungus isolated. YELLOWS (virus) was reported from Connecticut on the African marigold, T. erecta.

TROPAEOLUM MAJUS. NASTURTIUM: ROOT ROT (Corticium vagum), Mississippi.

TULIPA SPP. TULIP: FIRE, BOTRYTIS BLIGHT (Botrytis tulipae) was reported being generally less prevalent than usual; however, it was very severe locally in Virginia. It was reported besides from Massachusetts, New York, New Jersey, Ohio, and Wisconsin. MOSAIC or BREAKING (virus), New York, Arkansas.

VIBURNUM SP. VIBURNUM: DIE-BACK (Phomopsis sp.), New Jersey.

VIBURNUM OPULUS. SNOWBALL: STEM GALL (Phomopsis sp.), New York.

VINCA SPP. PERIWINKLE: CANKER (Phomopsis lirella), on V. minor in New Jersey. RUST (Puccinia vincae), Massachusetts.

VIOLA SPP. VIOLET: SCAB (Sphaceloma violae) was reported from New Jersey, Pennsylvania, and Alabama.

VIOLA TRICOLOR. PANSY: LEAF SPOT (Alternaria sp.), New Jersey. ANTHRACNOSE (Colletotrichum violae-tricoloris) was reported from New Jersey and from Delaware. In the latter State heavy seedling infection occurred in commercial plantings. CURLY TOP (virus) was found on pansy in Oregon (P. D. R. 18: 168-173).

WEIGELA SPP. WEIGELA: ROOT-KNOT (Heterodera marioni), Mississippi. The severe weather in December and January caused WINTER INJURY in Connecticut.

YUCCA FILAMENTOSA. COMMON YUCCA: LEAF SPOT (Coniothyrium concentricum), New Jersey.

ZANTEDESCHIA AETHIOPICA. CALLA LILY: LEAF SPOT (Alternaria sp.), New Jersey. CROWN ROT (Bacillus aroideae) was reported from New Jersey and Michigan. In the latter State it was destructive in one greenhouse in October. SOFT ROT reported as due to B. carotovorus caused heavy loss in a greenhouse in Georgia. ROOT ROT (Phytophthora richardiae) is causing less trouble each year in New York, due perhaps to the fact that corm treatment has become a common practice. SPOTTED WILT (virus), Indiana, Oregon. In Oregon it was found in a greenhouse in Portland where 20 per cent of the plants were affected.

ZINNIA ELEGANS. COMMON ZINNIA: LEAF SPOT (Cercospora sp.), New Jersey. POWDERY MILDEW (Erysiphe cichoracearum) was very severe in one county in North Dakota and was reported also from New Jersey and Kansas. STEM ROT (Sclerotinia sclerotiorum), Massachusetts and Washington. CROWN ROT (Sclerotium delphinii), New Jersey. MOSAIC (virus) caused less damage than usual in Kansas. PROLIFERATION (undetermined), in which the flower petals changed to bracts, was reported from Connecticut.

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Prepared by Nellie W. Nance.

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- squash, 79.
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  - gooseberry, 54.

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Puccinia anomala, barley, 22.
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- asparagi, asparagus, 84.
- caricis, gooseberry, 54.
- chrysanthemi, Chrysanthemum hortorum, 109.
- coronata, oats, 25.
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- glumarum, Agropyron cristatum, 38.
  - wheat, 18.
- graminis, Agrostis alba, 38.
  - Phleum pratense, 38.
- graminis avenae, oats, 24.
- graminis secalis, rye, 20.
- graminis tritici, barley, 22.
  - wheat, 17.
- helianthi, Helianthus annuus, 39.
  - sunflower, 39.
- iridis, Iris spp., 112.
- malvacearum, Althaea rosea, 106.
- plumbaria, Phlox spp., 116.
- podophylli, Podophyllum peltatum, 116.
- purpurea, Sorghum halepense, 38.
- rubigo-vera, Clematis spp., 109.
- rubigo-vera secalis, rye, 21.
- rubigo-vera tritici, wheat, 18.
- sorghi, corn, 26.
  - Oxalis sp., 115.
  - sweet corn, 29.
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- cucumber, 78.
- lettuce, 83.
- Pelargonium spp., 115.
- pepper, 87.
- spinach, 89.
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Pythium spp., alfalfa, 32.
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- pastinacae, parsnip, 86.
- vallisumbrosae, Narcissus spp., 115.

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- Centaurea cyanus, 108.
- Daphne sp., 110.
- Dianthus caryophyllus, 110.
- grass, 38.
- lettuce, 82.
- Pelargonium spp., 115.
- pepper, 87.
- strawberry, 50.
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  - soybean, 36.
  - tobacco, 92.
- crocorum, alfalfa, 32.
- solani, Aconitum sp., 106.
  - Calendula officinalis, 107.
  - Callistephus chinensis, 108.
  - Campanula medium, 108.
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- Rhizoctonia solani, Lupinus spp., 114.
  - Petunia hybrida, 115.
  - Robinia pseudoacacia, 104.
  - sweet potato, 70.
- Rhizopus sp., Narcissus spp., 115.
  - Sempervivum spp., 117.
- Rhizopus spp., squash, 79.
- Rhynchosporium secalis, barley, 23.
- Rhytisma acerinum, Acer spp., 102.
    - silver maple, 102.
  - punctatum, Acer spicatum, 102.
  - solidaginis, Solidago spp., 118.
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  - Dahlia spp., 110.
  - Paeonia spp., 115.
  - sweet clover, 35.
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  - tomato, 66.
- Root cankers, parsnip, 87.
- Root rot, sweet corn, 30.
  - (undet.), apple, 42.
    - pepper, 87.
- Root rots, bean, 68.
  - strawberry, 50.
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- Rosette (virus), peach, 46.
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- Russetting, parship, 87.
  - pear, 44.

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- Sclerotinia sp., swiss chard, 89.
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  - fructicola, cherry, 48.
    - peach, 45.
    - plum, 47.
  - gladioli, Gladiolus sp., 111.
  - minor, lettuce, 83.
  - sclerotiorum, Antirrhinum majus, 106.
    - bean, 68.
    - cabbage, 73.
    - carrot, 86.
    - cauliflower, 74.
    - celery, 82.
    - cucumber, 78.
- Sclerotinia sclerotiorum, Delphinium spp., 110.
    - lettuce, 82.
    - potato, 61.
    - Senecio cruentus, 117.
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    - strawberry, 51.
    - sunflower, 39.
    - tomato, 66.
    - Zinnia elegans, 119.
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    - clover, 34.
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  - delphinii, Aconitum sp., 106.
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  - rhizodes, grass, 38.
  - rolfsii, apple, 41.
    - bean, 68.
    - cantaloupe, 77.
    - Paeonia spp., 115.
    - peanut, 95.
    - pepper, 87.
    - potato, 61.
    - soybean, 36.
    - strawberry, 51.
    - tobacco, 92.
    - tomato, 66.
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- Septoria sp., Chrysanthemum hortorum, 109.
    - grass, 38.
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    - Azalea indica, 107.
  - Chrysanthemella, Chrysanthemum hortorum, 109.
  - cucurbitacearum, cantaloupe, 77.
  - euonymi, Euonymus japonicus, 111.
  - gladioli, Gladiolus sp., 111.
  - lactucae, lettuce, 83.

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    pea, 84.
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  tritici, wheat, 19.
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    Quercus alba, 104.
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Soft rot, Sempervivum spp., 117.
Sorosporium reilianum, corn, 26.
    sorghum, 30.
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Sphacelotheca sorghi, sorghum, 30.
Sphaeropsis sp., Japanese maple, 102.
    Quercus spp., 104.
    Rhododendron spp., 116.
  ulmicola, Ulmus spp., 105.
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    Lycium sp., 114.
  humuli, raspberry, 52.
    Rosa spp., 117.
    strawberry, 50.
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  virginica, Ostrya virginiana, 103.
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  decipiens, Agrostis palustris, 37.
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  levis, wheat, 17.
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- Tranzschelia pruni-spinosae, cherry, 48.
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  - vulgaris, Acer pseudoplatanus, 102.
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U

- Uneven ripening, grape, 49.
- Uredo behnickiana, Cattleya sp., 108.
- Urocystis cepulae, onion, 71.
  - occulta, rye, 21.
  - tritici, wheat, 17.
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  - caryophyllinus, Dianthus caryophyllus, 110.
  - fabae, pea, 84.
  - lespedezae-procumbentis, lespedeza, 37.
  - medicaginis, alfalfa, 33.
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  - phaseoli typica, bean, 68.
  - trifolii fallens, Trifolium pratense, 34.
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  - trifolii trifolii-repentis, clover, 34.
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- Ustilago avenae, oats, 24.
  - hordei, barley, 21.
  - hypodytes, grass, 38.
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  - levis, oats, 24.
  - medians, barley, 22.
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  - rabenhorstiana, Digitaria sanguinalis, 38.
  - striaeformis, grass, 38.
  - tritici, wheat, 17.
  - zeae, corn, 26.
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V

- Valsa pauperata, Acer dasycarpum, 102.
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- Venturia sp., Cotoneaster spp., 109.
  - inaequalis, apple, 39.
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- Verticillium sp., Aconitum sp., 106.
    - Antirrhinum majus, 106.
    - Azalea spp., 107.
    - Berberis thunbergii, 107.
    - Callistephus chinensis, 108.
    - Chrysanthemum hortorum, 109.
    - eggplant, 86.
    - elm, 100.
    - Erigeron sp., 110.
    - Phlox spp., 116.
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  - alboatrum, Acer spp., 102.
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    - Liatris sp., 113.
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    - raspberry, 53.
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- Whiptail (non-par.), cauliflower, 74.
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Y

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Z

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